

AUSTRALIAN + NEW ZEALAND
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Impact and implications of changing practice in pelvic floor procedures: results from a registry survey
Aruna Kartik, Rasa Ruseckaite, J Oliver Daly, Helen E O'Connell, Jennifer King, Fiona Bach, Elizabeth Gallagher, Jessica Yin, Jerome Melon, Emmanuel Karantanis, James Keck, John Short, Susannah Ahern

Evaluation of a pelvic health physiotherapy service in remote Australia
Stephanie Dwyer, Ivan Lin

Techniques for total excision of retropubic and transobturator midurethral mesh slings
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Call for Papers

The *Australian and New Zealand Continence Journal* seeks articles and original research papers from people practising and researching the management and treatment of incontinence and continence health promotion.

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Articles may be papers for peer review, clinical updates, case studies or evaluation of programs.

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EDITORIAL

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We are excited to present this September edition of the Australian and New Zealand Continence Journal. Included are three articles that our team is confident will be of great interest. The first manuscript, *Impact and implications of changing practice in pelvic floor procedures: results from a registry survey* by Aruna Kartik and colleagues¹ provides insights into contributing factors and clinical practice responses after the establishment of the Australasian Pelvic Floor Procedure Registry in 2019. The second publication, *Evaluation of a remote pelvic health physiotherapy service* by Stephanie Dwyer and Ivan Lin² outlines the requirements for, and benefits of, pelvic health physiotherapy in The Kimberley, a remote region of Australia. The final publication, *Techniques for total excision of retropubic and trans-obturator midurethral mesh slings* by Hannah Krause, Kurinji Kannan and Judith Goh³ offers experienced clinical insights into techniques used in the surgical management of mesh complications. Working with such experienced teams of authors and reviewers during the publication processes for these articles was a wonderful experience.

It was a delight to see such a broad variety of quality research presented at the 32nd National Conference on Incontinence in Brisbane earlier this year. Thank you to all those who visited Sarah Tayler, our managing editor, and myself at the CFA booth. It was wonderful hearing so many stories about the history of the journal, as well as the benefits that its embedded research has brought to enhance knowledge in the fields surrounding continence. It was also good to hear that the journal has been a supportive research outlet for early and mid-career researchers. We certainly welcome submissions from anyone who presented at the conference and can be contacted at journal@continence.org.au if you have any queries or questions about the publication process.

Our team works hard to ensure visibility of published works in the journal. To facilitate this, all publications are available online, as diamond open access, which means there are no costs to authors or readers. Each article is allocated an individual DOI number to assist with referencing and tracking and is listed across a number of online databases. It is these features and initiatives that help our journal stand out, and make it an excellent outlet for submission and the publication of quality works. If you are a first-time author, our reviewing and editorial teams also offer feedback and support to assist on the track to a successful peer-reviewed publication. Performing research not only helps our community with increased knowledge and insights, but also advances the mission of the

Continence Foundation of Australia and Continence New Zealand to promote bladder and bowel health and eliminate the stigma and restrictions of all aspects of incontinence.



Christian Moro

Editor-In-Chief and Chair
Australian and New Zealand Continence
Journal

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1. Kartik A, et al. Impact and implications of changing practice in pelvic floor procedures: results from a registry survey. Australian and New Zealand Continence Journal. 2024;30(3):46-59.
2. Dwyer S, Lin I. Evaluation of a pelvic health physiotherapy service in remote Australia. Australian and New Zealand Continence Journal. 2024;30(3):60-72.
3. Krause HG, Kannan K, Goh JTW. Techniques for total excision of retropubic and trans-obturator midurethral mesh slings. Australian and New Zealand Continence Journal. 2024;30(3):73-79.

ORIGINAL ARTICLE

Impact and implications of changing practice in pelvic floor procedures: results from a registry survey

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ABSTRACT

Introduction The Australasian Pelvic Floor Procedure Registry (APFPR) was established in 2019 to monitor safety and efficacy of pelvic floor procedures (PFP) that use prostheses. This followed increased international and Australian regulation of mesh for PFPs, resulting in an overall reduction in PFPs and changes to the procedure profile. The aim of this study was to determine contributing factors and clinician responses to clinical practice trends, and implications for the APFPR.

Methods An online clinician survey was developed and distributed between July and October 2022 to APFPR contributing clinicians and USANZ and UGSA members. Descriptive statistics were calculated and stratified analysis performed.

Results Seventy-nine valid responses were received. Approximately two-thirds of respondents reported a decline in procedures to implant mesh slings; forty percent reported a decline in mesh sacrocolpopexy; and 40% and 50% reported an increase in explantations of mesh used for stress urinary incontinence (SUI) and pelvic organ prolapse (POP) respectively. Contributing factors for SUI procedure changes were patient preference (83%) and litigation concerns (59%), for POP procedures it was mesh non-availability (81%). Clinician responses included changing to other procedures (SUI 54%; POP 71%); conservative management (SUI 17%); and upskilling and onward referral (14%, 10%) for POP. Responses varied by specialty group. A majority recommended adding native tissue SUI procedures to the APFPR.

Conclusion The survey provides insights into the impact and implications of the reduction in pelvic prostheses over the last 5 years. The addition of native tissue SUI procedures to the APFPR will ensure it maintains clinical relevance in a changing landscape.

Keywords pelvic floor procedures, clinical practice, survey, clinical quality registry

INTRODUCTION

The Australasian Pelvic Floor Procedure Registry (APFPR) is a clinical quality registry (CQR) that prospectively monitors the safety and quality of pelvic floor procedures (PFPs) that involve mesh or other prostheses including implantation, revision and explantation.¹ PFPs are surgical interventions to treat stress urinary incontinence (SUI) and pelvic organ prolapse (POP), commonly diagnosed pelvic floor disorders affecting women.^{2,3}

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The success with initial outcomes and durability following the introduction of the mesh sling procedures in the late 1990s led to optimism over potentially improved efficacy for mesh-based prolapse repairs. However, this was followed by significant safety concerns with legal proceedings being brought against mesh manufacturers in Australia.⁴ Along with advocacy by consumer support groups, these events paved the way for a Senate Committee Inquiry to investigate transvaginal mesh complications suffered by women. The Senate Inquiry in 2018 recommended the establishment of a CQR to monitor and track PFPs that use high-risk implantable devices and to support the Therapeutic Goods Administration (TGA) with its post-marketing surveillance. Consequently, the APFPR came into existence in 2019 with funding from the Commonwealth Department of Health with aims to collect information on outcomes of PFPs involving prostheses and provide benchmarked reports to surgeons and hospitals to support continuous improvement in PFP care.⁵ The recently published 2023 APFPR Annual Report presents information on approximately 600 PFPs including revisions and explantations.⁶

Concurrently, the TGA embarked on reviews of pelvic prostheses which resulted in the withdrawal of transvaginal mesh products for POP and single-incision slings for SUI from the Australian Register of Therapeutic Goods (ARTG) in 2017 along with the up-classification of risk levels for many mesh products.⁷ The TGA actions combined with the medicolegal processes saw manufacturers cease development and marketing, and even withdraw mesh products which drastically reduced their availability for surgical use.⁸

Anecdotal claims of declines in the use of surgical prostheses for PFDs were corroborated by research examining the Medicare Benefits Schedule (MBS) procedure codes and Australian Institute of Health and Welfare (AIHW) hospital operative data.^{9, 10} Mid-urethral sling (MUS) insertions and total number of SUI operations halved from 2008 to 2018.¹⁰ Total POP procedures declined by 40% from 2006 to 2021.⁹ The authors reported constraints in determining trends for POP mesh procedures due to MBS and AIHW data prior to 2018 not distinguishing between mesh-related procedures and native tissue repair. Since 2018, transvaginal POP mesh procedures could not be claimed under the MBS item codes.¹¹

The Australian Commission on Safety and Quality in Health Care (ACSQHC) developed resources for consumers, clinicians and health services on credentialing of practitioners to undertake mesh-related PFPs in line with position statements by the relevant colleges and medical societies.¹²⁻¹⁴ Furthermore, the ACSQHC developed a service model framework for the provision of mesh-related services in each jurisdiction.¹²

In addition to the above-described changes in the external environment, clinician accounts of patients preferring non-mesh interventions and increasing

negative sentiment relating to pelvic mesh were emerging. A review of international registries found that most captured a mix of mesh-related and native tissue procedures to enable comparisons regarding safety and effectiveness.¹⁵ Thus the APFPR considered that a survey of surgeons from its participating specialty groups was important to understand changing practice at the practitioner level and the implications for the future scope of the registry. The aims of this study were to ascertain the impact of changes in the external environment on PFPs undertaken by practitioners, and their implications for the APFPR.

MATERIALS AND METHODS

This was a cross-sectional online survey that targeted surgeons from the APFPR participating specialty groups namely: urogynaecologists, urologists, and general gynaecologists from Australia and New Zealand performing PFPs. The survey tool (Appendix A) was developed with input from the clinician representatives on the APFPR clinical advisory committee. It comprised five sections, with a total of 17 questions. Demographic information included specialty group membership, clinician years of practice, jurisdiction of practice, public vs private practice and metropolitan vs regional and rural settings. The clinician survey sought information regarding previous and current surgical practice relating to common PFPs, change in referral patterns, associated factors, and how any changes were managed. Finally, the survey asked questions relating to the future scope of the registry and perceived benefits of participating in the APFPR.

The survey was finalised after pilot testing by the clinicians on the APFPR clinical advisory committee. The link to the survey included an invitation to participate, which explained the aims of the survey, its voluntary nature, and the requirements for participation. An implied consent process was utilised. The survey was administered online through Qualtrics Survey Software from July to October 2022. The survey was completed anonymously and did not seek any identifiable information.

The Qualtrics survey link was distributed by the following Australian and New Zealand surgical societies or colleges: USANZ and UGSA through their mailing lists/newsletters to all their members with a reminder after a week. In addition, the APFPR emailed the survey link to its contributing clinicians and disseminated it to surgeons at specialty group meetings/conferences.

Quantitative data were statistically analysed in two stages. Firstly, descriptive statistics were calculated for appropriate variables and responses reported as both whole numbers and proportions. Secondly, sub-analyses by participant characteristics were undertaken for questions where the participant responses were varied. Stratification by specialty group, hospital setting and years of specialist experience was also performed (this supplementary data can be found in Appendix B). Data analysis was undertaken using the STATA 17 package. Ethics approval was obtained

from the Monash University Human Research Ethics Committee, Melbourne, Australia (Project I.D. 34517).

RESULTS

The survey was distributed to approximately 750 USANZ members and 200 UGSA members. Approximately 40% of USANZ members are estimated to currently perform PFPs. This adds up to an eligible population of approximately 500 surgeons.

A total of 99 survey responses were obtained of which 20 were excluded owing to no clinical practice-related questions being completed. So, 79 valid responses were included in the analysis, representing a response rate of 15% (79/500*100).

Table 1 provides an overview of key demographic variables. All three specialty groups were represented in the sample with urogynaecologists, urologists and general gynaecologists comprising 38%, 33% and 29% of the sample respectively. Over 70% of respondents were affiliated with both public and private practice. All jurisdictions participated in the survey with NSW (35%) and Victoria (19%) having the highest representation. 80% of surgeons practiced in metropolitan areas, 18% in regional and 4% in rural settings. The sample represented specialists across a broad range of years of practice.

Table 1. Respondent characteristics

Demographic data	Responses	Count (%)
Specialty group representation	Urogynaecologist	30 (38)
	Urologist	26 (33)
	Gynaecologist	23 (29)
Surgical practice type	Public only	12 (15)
	Private only	11 (14)
	Mixed Private/public	56 (71)
Jurisdictional representation	NSW	28 (35)
	VIC	15 (19)
	QLD	10 (13)
	NT	1 (1)
	SA	7 (9)
	WA	4 (5)
	TAS	3 (4)
	ACT	1 (1)
*Hospital setting	Metropolitan	63 (80)
	Regional	14 (18)
	Rural	3 (4)
Number of years as a specialist	<5 years	13 (17)
	5-10 years	15 (19)
	11-20 years	19 (24)
	21-30 years	20 (25)
	>30 years	12 (15)

*Multiple responses allowed

Table 2 describes pre-pandemic PFPs performed by specialty group. Regarding SUI procedures, approximately 87% of respondents reported performing mesh slings; approximately three-quarters performed urethral bulking agent procedures and SUI mesh explantations, with smaller proportions undertaking fascial slings (62%) and Burch colposuspensions (35%). Analysis by specialty group showed that majority of urogynecologists performed all SUI procedures, as did urologists (with the exception of Burch colposuspension). General gynaecologists less commonly undertook SUI procedures other than mesh sling procedures. Supplementary analysis also showed that mesh slings were by far the most commonly performed procedure in regional/rural settings (77%) compared to metropolitan settings where a wider range of SUI procedures were performed. Also, a higher proportion of early career surgeons reported performing mesh slings (96%) as compared to surgeons with more experience with reduction by 20 percentage points from early career to most experienced surgeons.

For POP procedures, the most common procedures performed were anterior and posterior repairs (over 80%) and sacrospinous ligament fixations (75%). The main POP procedures captured by the APFPR (mesh sacrocolpopexy, mesh sacrohysteropexy and explantations) were performed by approximately 60%, 30% and 68% of surgeons respectively.

Similar to the SUI procedures, the majority of urogynaecologists undertook all POP procedures, with the exception of native tissue sacrocolpopexy (13%), and mesh and native tissue sacrohysteropexy (43% and 27% respectively). A high proportion of general gynaecologists performed vaginal hysterectomy (91%), which was less commonly undertaken by urologists (13%). POP mesh explantations were undertaken by all specialty groups, including 97% of urogynaecologists, 50% of urologists and 48% of general gynaecologists. Supplementary analysis showed that POP mesh procedures, eg sacrocolpopexy with mesh (and mesh explantations) were more commonly undertaken in metropolitan areas -66% (74%) compared to 38% (44%) in regional/rural areas.

Figure 1A presents SUI procedure practice changes over the last five years. Sixty-four percent of respondents reported a decline in mesh slings; 50% noted an increase in mesh explantation; and over a third reported an increase in other procedures including the use of urethral bulking agents (37%).

Figure 1B reveals POP procedure practice changes, with over 40% of surgeons reporting a reduction in mesh sacrocolpopexy and sacrohysteropexy with a similar proportion recording an increase in mesh explantations. A third to half of respondents reported an increase in sacrohysteropexy and sacrocolpopexy using native tissue.

Figure 2A depicts the importance of selected factors associated with the changes in clinical practice. Patient preference (83%) and litigation concerns (59%) were reported as the two most important factors associated

with the decline in mesh slings, while mesh availability (81%) followed by patient preference (62%) were most important in the reduction of mesh sacrocolpopexy. Supplementary analysis showed that gynaecologists predominantly reported concern over litigation (71%) while urogynaecologists more often cited patient preference (95%) as contributing to decline in mesh sling procedures.

Figure 2B presents clinician responses to manage the aforementioned changes. For SUI procedures, 54%

percent of surgeons managed the decline in mesh slings by changing to other procedures, with 17% choosing non-operative management and 15% referring to others. Only 2% reported upskilling in other procedures. Supplementary analysis showed that urologists were more likely than others to report changing to other procedures (67%) or upskilling (8%) to manage this change, while one third of general gynaecologists reported referring patients to other practitioners, and half of them choose non-operative management.

Table 2. Previous referral patterns for SUI & POP by specialty group

	General gynaecologist (N= 23)	Urogynaecologist (N= 30)	Urologist (N= 26)	Overall (N= 79)
Performed following SUI procedures in past 5 years				
Mesh sling	21 (91.3%)	29 (96.7%)	19 (73.1%)	69 (87.3%)
Autologous fascial sling	3 (13.0%)	21 (70.0%)	25 (96.2%)	49 (62.0%)
Burch colposuspension	7 (30.4%)	18 (60.0%)	3 (11.5%)	28 (35.4%)
SUI mesh explantation	11 (47.8%)	28 (93.3%)	19 (73.1%)	58 (73.4%)
Urethral bulking agents	5 (21.7%)	30 (100.0%)	24 (92.3%)	59 (74.7%)
Performed following POP procedures in past 5 years				
Sacrocolpopexy (with mesh)	12 (52.2%)	26 (86.7%)	8 (33.3%)	46 (59.7%)
Sacrocolpopexy (no mesh)	4 (17.4%)	4 (13.3%)	4 (16.7%)	12 (15.6%)
Sacrohysteropexy (with mesh)	5 (21.7%)	13 (43.3%)	6 (25.0%)	24 (31.2%)
Sacrohysteropexy (no mesh)	2 (8.7%)	8 (26.7%)	3 (12.5%)	13 (16.9%)
Anterior repair	23 (100.0%)	27 (90.0%)	18 (75.0%)	68 (88.3%)
Posterior repair	23 (100.0%)	27 (90.0%)	15 (62.5%)	65 (84.4%)
Sacrospinous ligament fixation	23 (100.0%)	27 (90.0%)	8 (33.3%)	58 (75.3%)
Uterosacral ligament suspension	19 (82.6%)	19 (63.3%)	3 (12.5%)	41 (53.2%)
Vaginal hysterectomy	21 (91.3%)	26 (86.7%)	3 (12.5%)	50 (64.9%)
POP mesh explantation	11 (47.8%)	29 (96.7%)	12 (50.0%)	52 (67.5%)

SUI= Stress Urinary Incontinence, POP= Pelvic Organ Prolapse

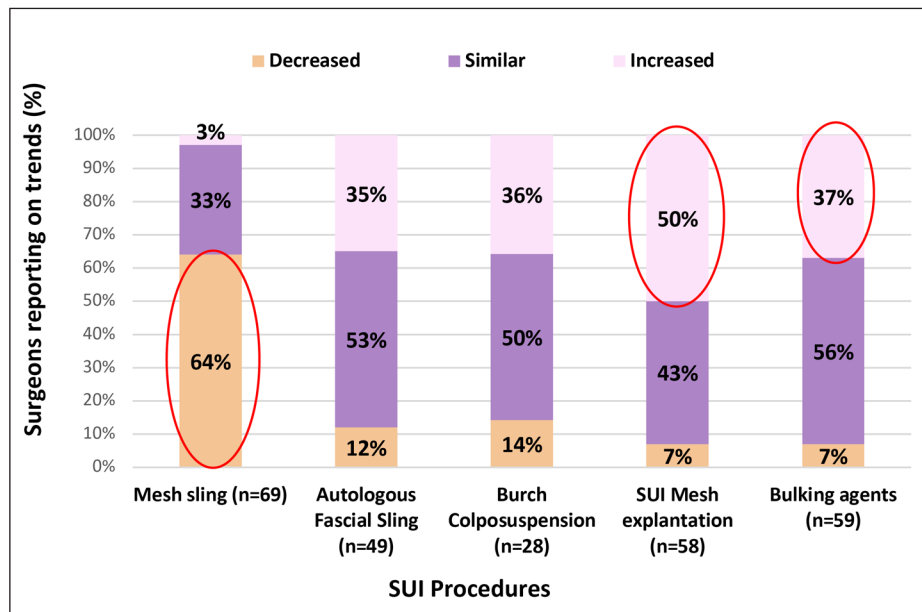


Figure 1A. SUI Procedure trends

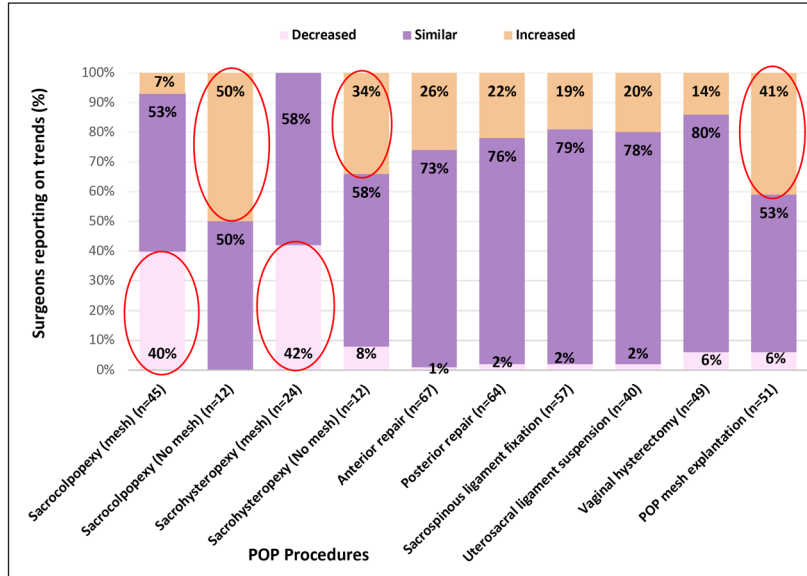


Figure 1B. POP Procedure trends

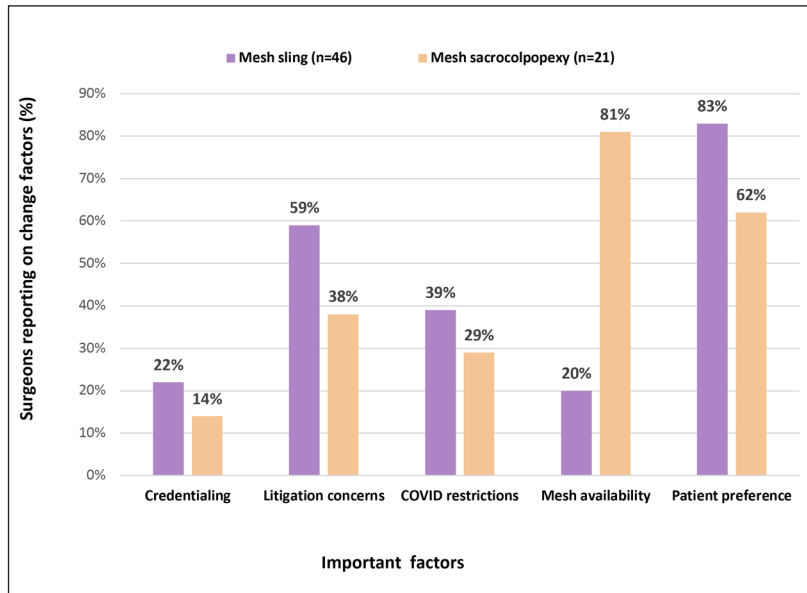


Figure 2A. Change factors for mesh sling and mesh sacrocolpopexy

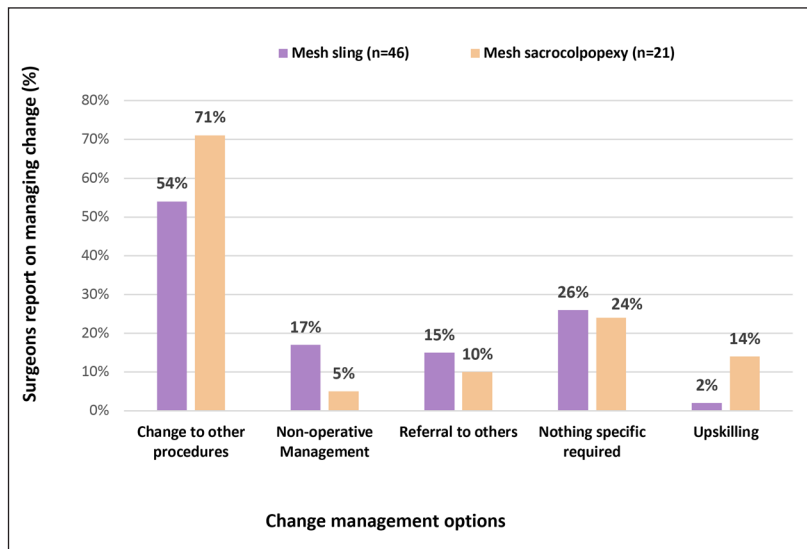


Figure 2B. Clinician responses to change-how was change managed?

Practitioners in rural/regional areas were more likely to choose non-operative management (63%) while those in metropolitan areas more frequently changed to other procedures (59%).

Regarding POP procedures, 71% of surgeons managed the decline in mesh sacrocolpopexy by changing to other procedures, with 14% choosing to upskill, 10% referring to others and 5% choosing conservative management. For both SUI and POP, approximately one quarter responded that no specific change in practice was required.

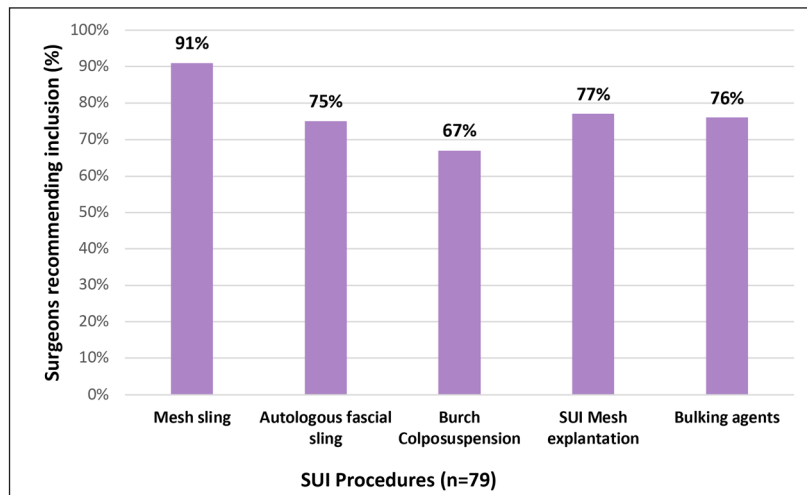
In relation to recommendations for inclusion of procedures in the scope of the registry, more than three-quarters of respondents agreed to continue capturing mesh-related SUI and POP procedures including the use of bulking agents (Figures 3A and 3B). Additionally, 75% of the respondents recommended also capturing data about autologous fascial slings

and 67% suggested collecting data about Burch colposuspension. This threshold was not reached for including native tissue POP procedures, where the majority recommended that the APFPR continue to capture only mesh-related POP procedures. There was agreement among specialty groups on the recommendations (Appendix B).

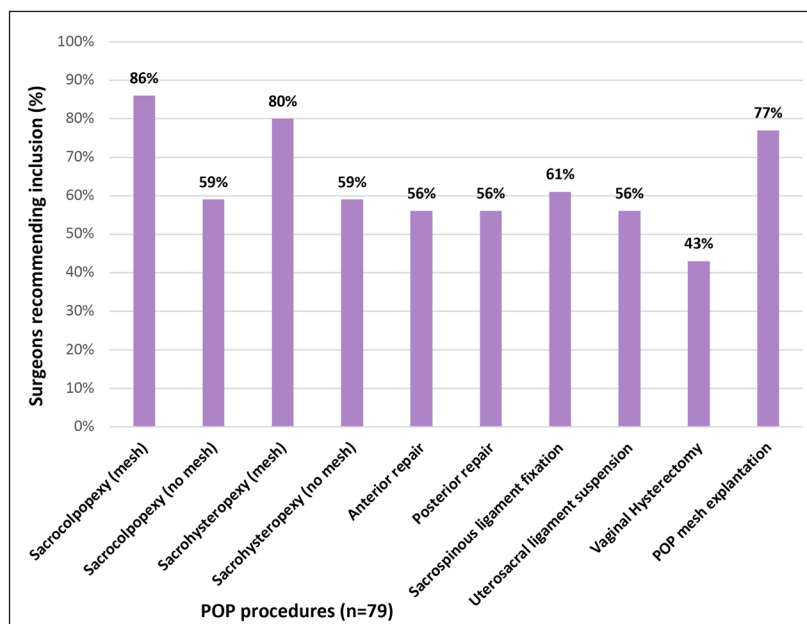
Furthermore, 55% agreed that the APFPR participation was assisting with medical board-mandated outcome monitoring, and 62% agreed that it was meeting the ACSQHC's credentialing requirements for PFPs (Appendix B).

DISCUSSION

Data provided by clinicians form the bedrock of a successful clinical quality registry. Following the Senate Inquiry into transvaginal mesh complications, the APFPR was established to systematically monitor



3A. Recommendation for inclusion of SUI procedures



3B. Recommendation for inclusion of POP procedures

and report on mesh-related procedures. With the continued decline in pelvic mesh use, the registry wanted to understand the implications of this on clinical practice, and the surgeon survey provided the basis for informing the future scope of the registry to keep pace with the changing external landscape. The survey received good representation across all specialty groups, hospital settings, practice types and seniority levels.

Since their introduction in the 1990s, mid-urethral slings rose to become the gold standard in minimally invasive treatment of SUI. In Australia, they came to be widely adopted by all specialist groups and are the ACSQHC's recommended treatment for SUI.^{16, 17} Our survey found mesh slings to be the most commonly undertaken treatment for SUI in the last five years, and was adopted by all specialty groups, career stages and hospital settings, and continued to be a preferred treatment for SUI.

The decline in mesh sling procedures reported against the backdrop of widespread adoption of mesh slings was similar for all specialty groups, settings and years of practice; and has been verified by an analysis of MBS/ACHI procedure codes in Australia.¹⁸ The TGA withdrawal of mini-slings and other transvaginal mesh products from the ARTG in 2017 could potentially have contributed to the declining trend in pelvic mesh use in Australia.¹⁹ Not surprisingly, patient preference and litigation concerns were paramount consequent to the media scrutiny of medicolegal proceedings,²⁰ and negative consumer sentiment affecting surgeons' preferences as observed by Whoriskey et al.²¹

Most surgeons managed this decline by changing to other procedures and a smaller proportion recommended ongoing conservative management. In the UK, mesh slings for SUI and transvaginal mesh for POP procedures were paused in 2017 and the restriction remains to date.²² The British Society of Urogynaecology Audit in its annual report reveals the growing popularity of urethral bulking agent injections that now represent nearly 70% of all SUI procedures with smaller increases in other native tissue SUI procedures.²³ Although the report demonstrates lower efficacy with urethral bulking agents, it nevertheless, represents an acceptable alternative especially for older patients with multiple comorbidities.²⁴

General gynaecologists compared to the other specialists were more likely to refer patients onward or choose non-operative management consistent with the Commission's recommendation for conservative management prior to surgery.^{17,25} Rural/regional practitioners were also more likely to choose non-operative management with implications for access to appropriate surgical care in rural/regional areas. If a restriction of mesh slings similar to the mesh pause in New Zealand is implemented in Australia,²⁶ women in rural/regional Australia will be disproportionately disadvantaged, as these patients belong to a lower socio-economic background and are less able to travel for treatment further amplifying inequities in care.²⁷

With POP procedures, the most common procedures were anterior and posterior native tissue repairs. With the imposition of hospital credentialing that requires logbook evidence of appropriate training and restriction on transvaginal mesh procedures after 2017,^{19,28} most mesh-related POP procedures including explantations were performed by urogynaecologists in metropolitan settings. This underscores the complex nature of these operations that rely on credentialed surgeons. The decline in POP procedures was the result of non-availability of mesh with more surgeons switching to native tissue procedures. Regulatory authorities considered the risk benefit ratio of POP mesh and determined that this did not justify routine availability.¹⁹ New approaches are also being evaluated, such as substituting sacrocolpopexy mesh with fascia lata which may prove promising.²⁹ However, the data in this regard is very limited at present and further comparative data is required.

Recommendations regarding the scope of the registry were in favour of including native tissue SUI procedures. This will allow the APFPR to monitor activity and outcomes for both native tissue and prosthetic slings, as well as bulking agents into the future. The lack of a similar recommendation for native tissue POP procedures suggests that these common procedures have sound outcome data available.

Strengths of our study include that it was an interdisciplinary survey that highlights the breadth of activity and change across Australia. The survey also provided an in-depth exploration of the context, contributing factors and strategies employed to manage practice change. It provides the 'why' to the ACHI/MBS data's 'what', and highlights the impacts and implications of change in surgical practice within different specialty groups and regional settings.

Limitations of the study included the low response rate (15%), which is comparable to other surveys of similar populations,^{21,30} but it yielded low numbers for the stratified analysis. However, we expect that the denominator of 500 is likely to be an overestimate, as there is no data regarding the number of clinicians who undertake PFPs. Despite this, all specialty groups were similarly represented, and overall the sample provided a broad cross-section of surgical practitioners that perform PFPs.

In conclusion, our study reports on surgeons' perspectives on the contributing factors to declining mesh use for pelvic floor procedures. Primarily, these appear to be patient preference, litigation concerns and non-availability of mesh products. Most surgeons chose switching to other procedures to address this change. Conceived as a mesh registry following the Senate Inquiry, the APFPR embarked on evaluating its scope and future direction to better serve its stakeholders in a changing landscape. The APFPR is ideally placed to continue examining and monitoring these practice changes at a system level, thereby providing meaningful and actionable information to inform policy and practice in relation to management of pelvic floor disorders.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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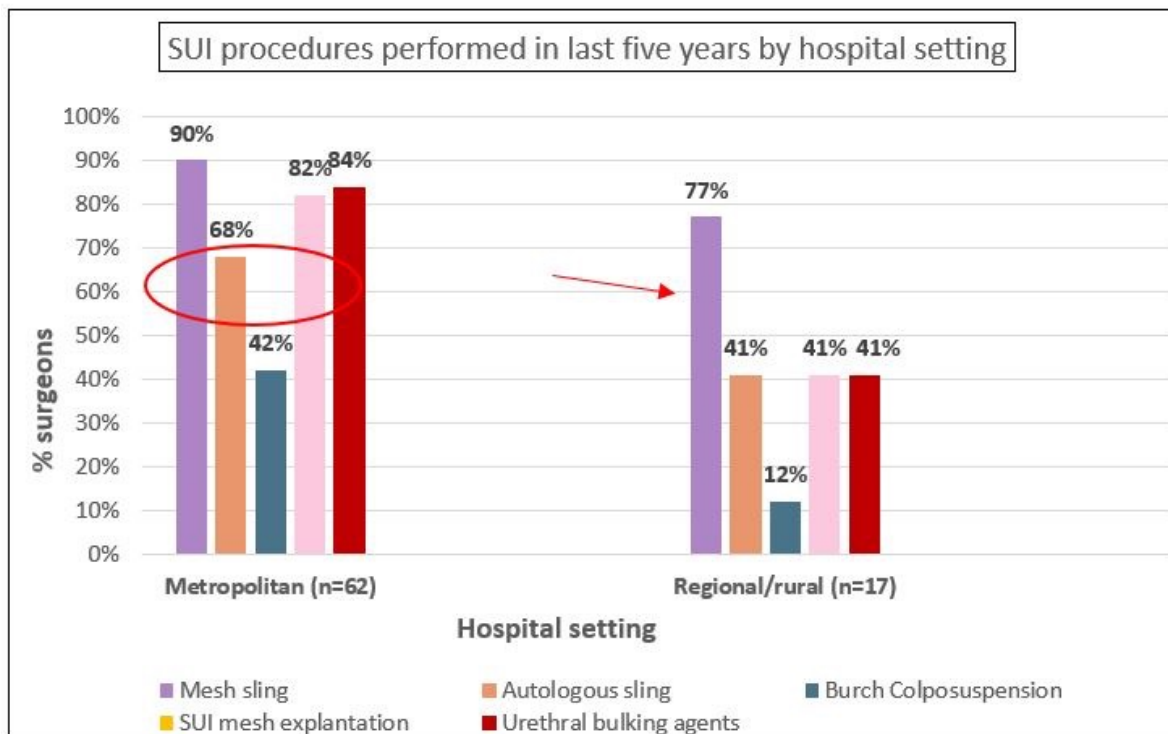
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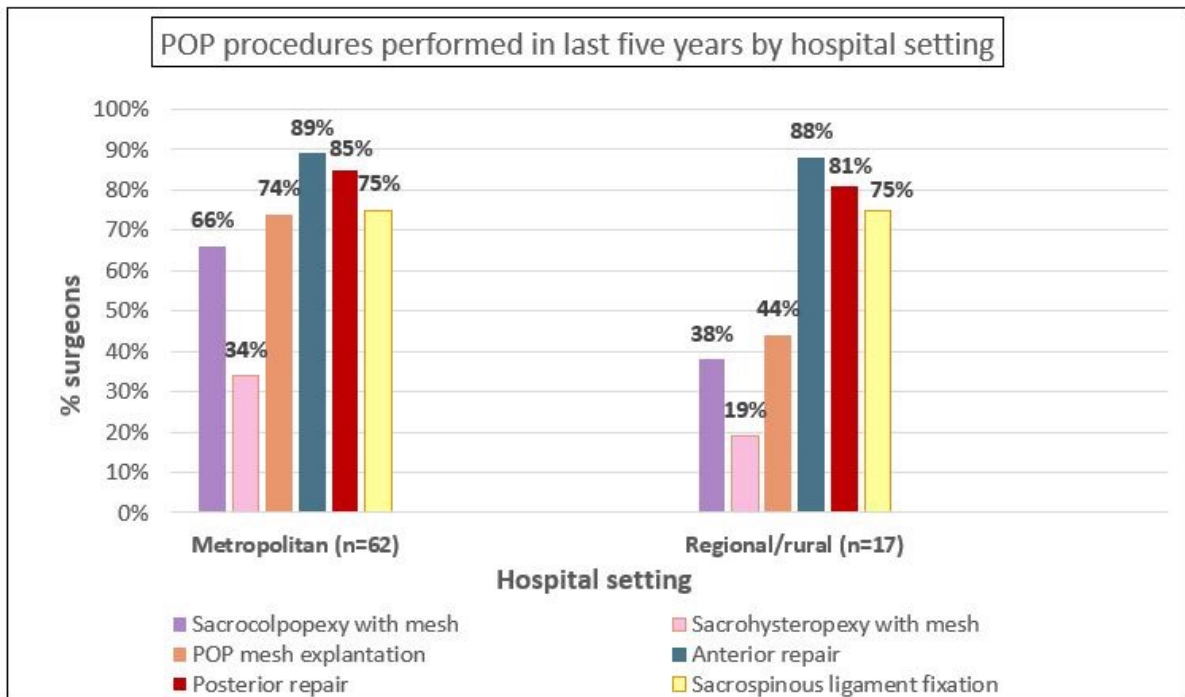
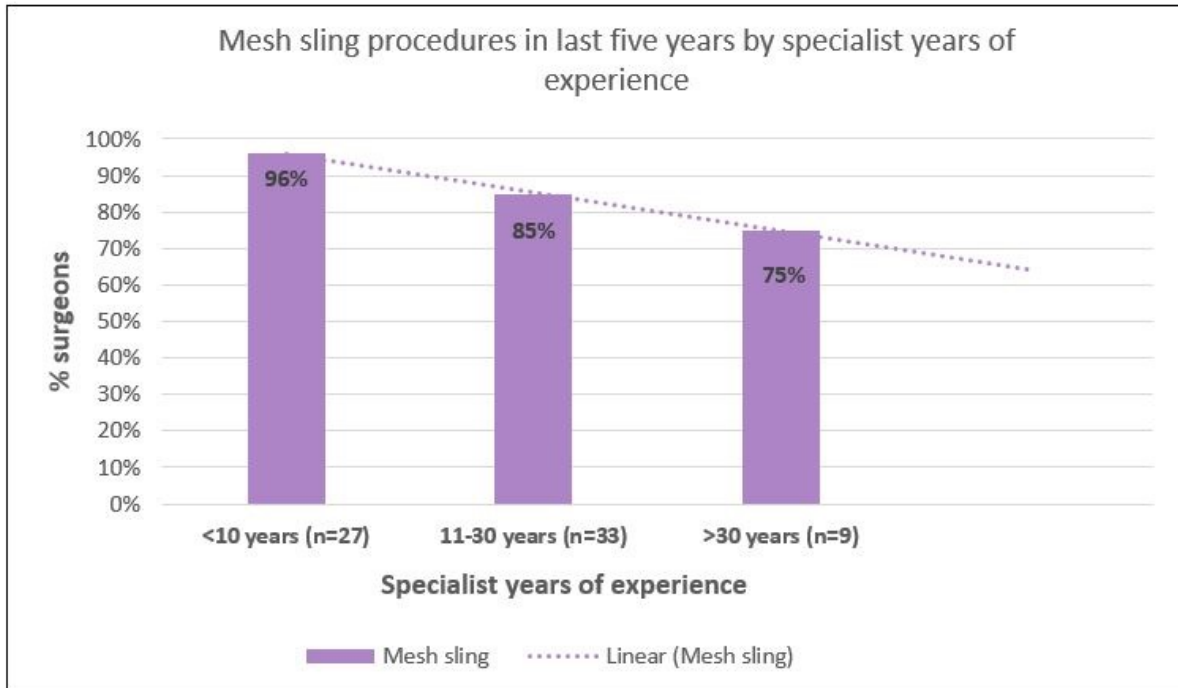
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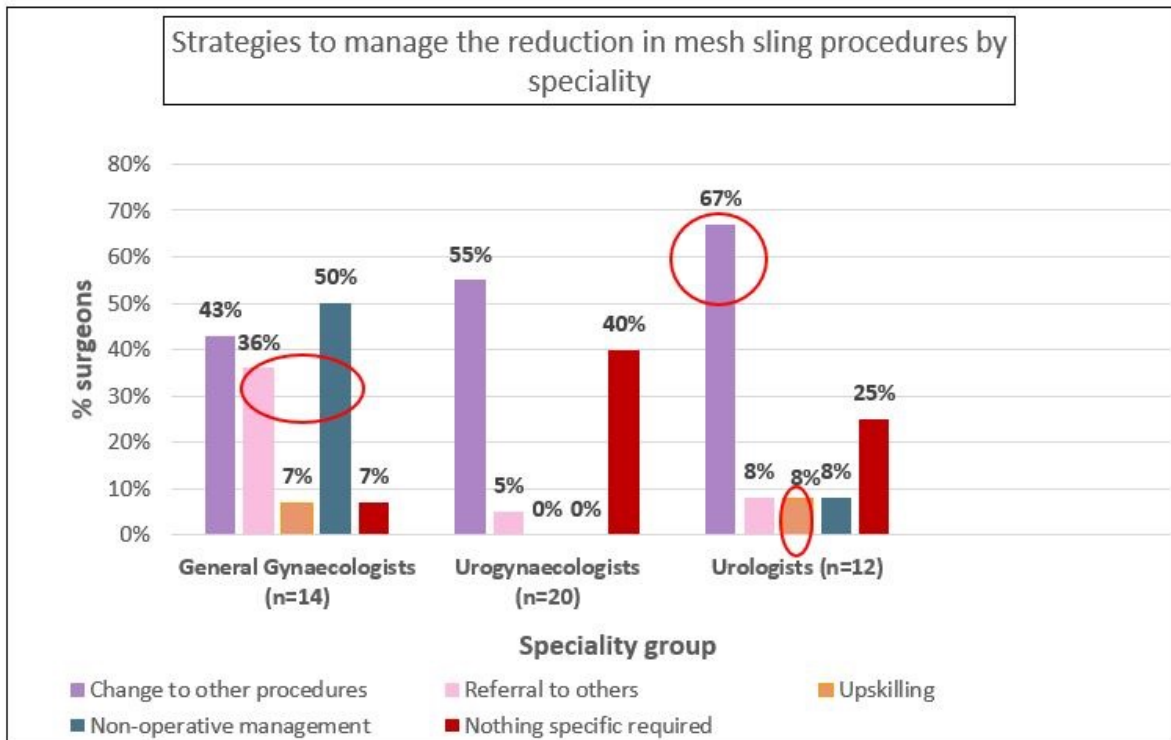
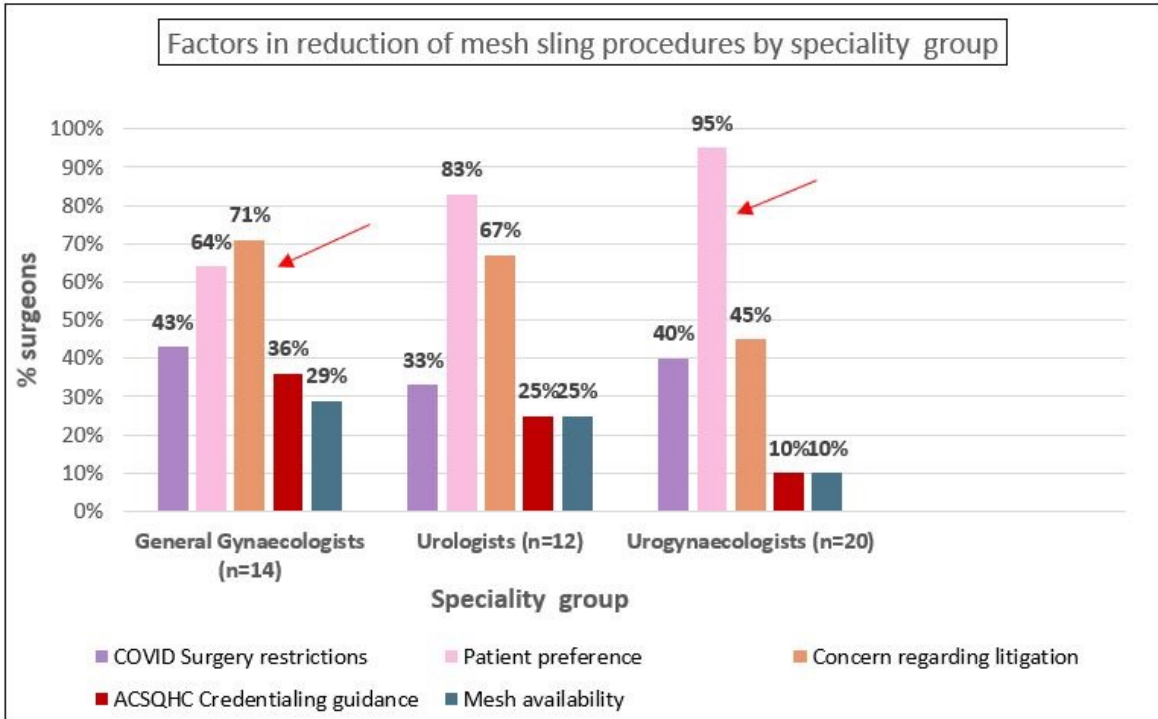
APPENDIX A. SUPPLEMENTARY MATERIAL

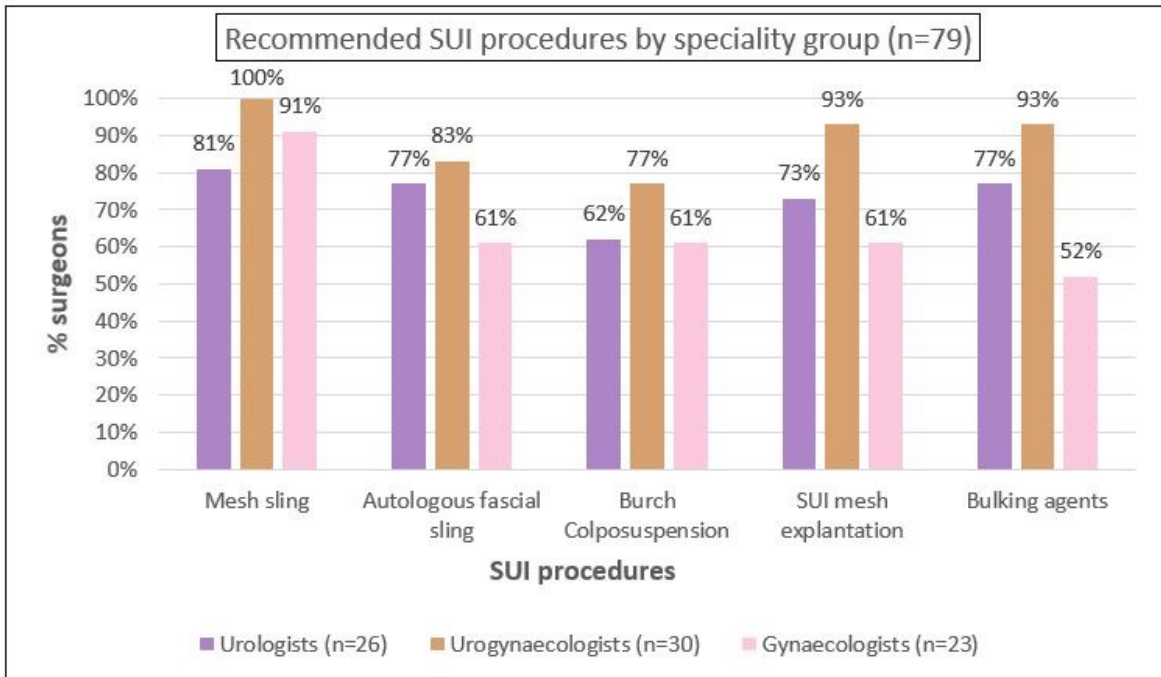
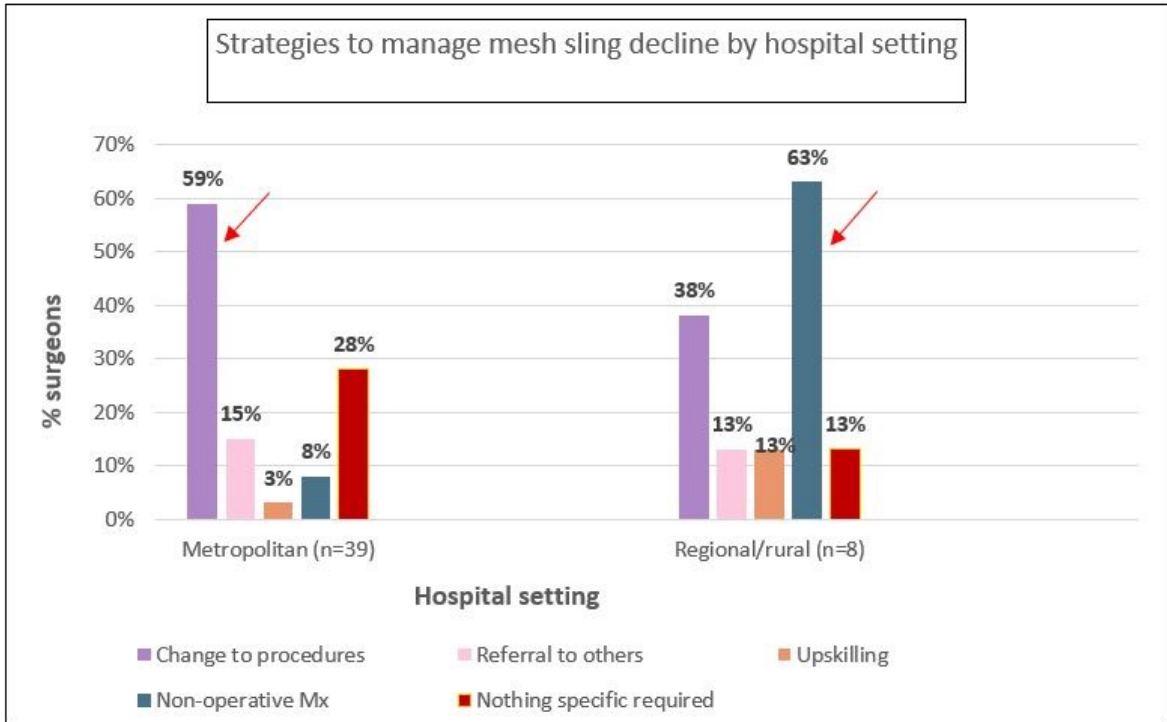
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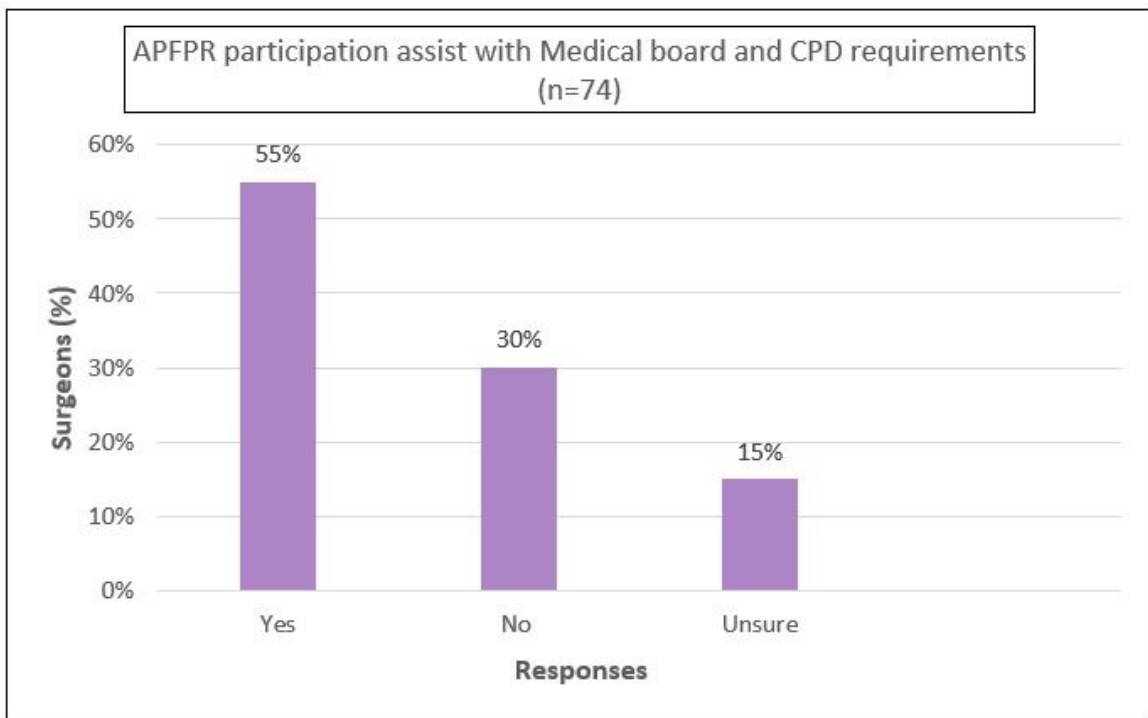
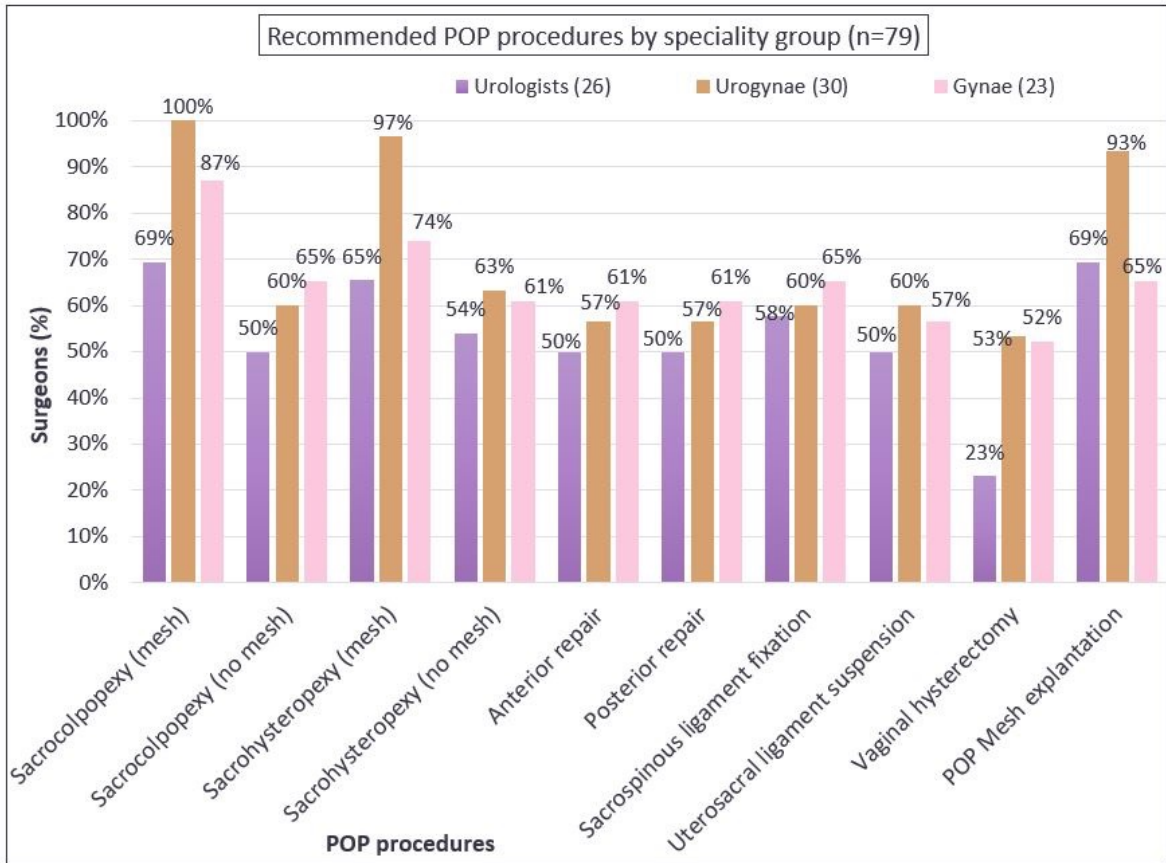
APPENDIX B. SUPPLEMENTARY MATERIAL

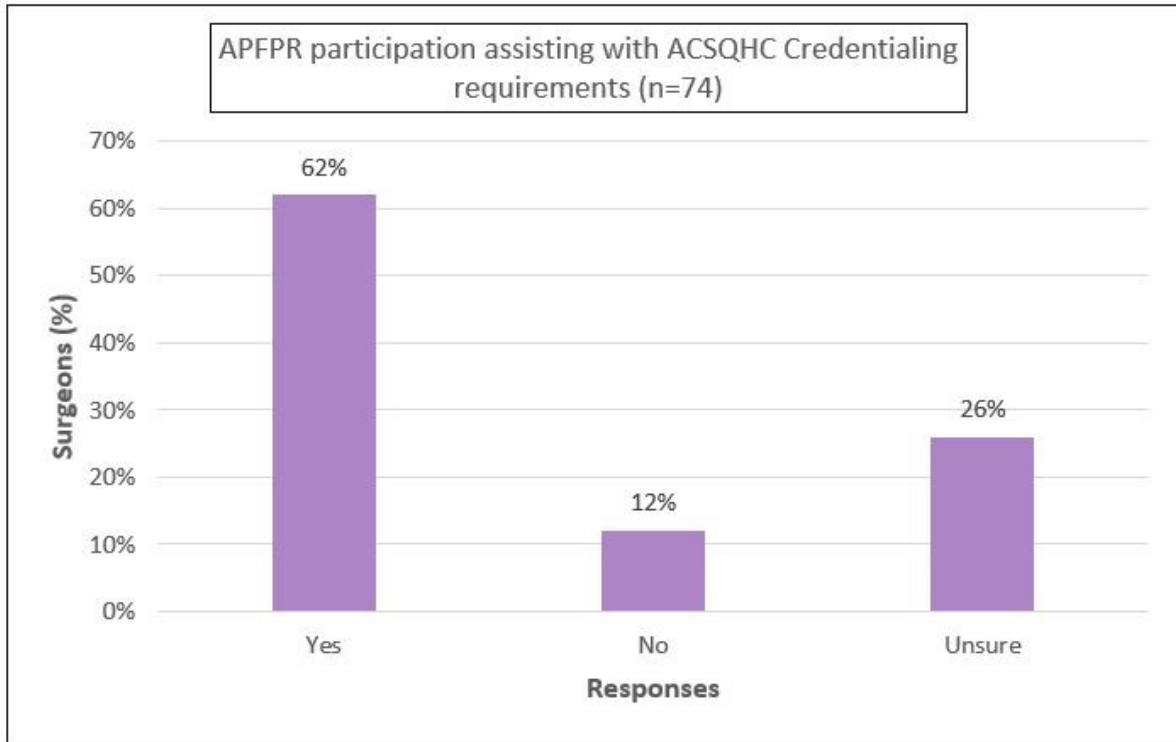












ORIGINAL ARTICLE

Evaluation of a pelvic health physiotherapy service in remote Australia

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ABSTRACT

Pelvic health physiotherapy care is considered best practice for managing many pelvic health conditions. However, access to pelvic health physiotherapy varies greatly, and may be lacking in rural and remote areas of Australia. This study reports an evaluation of a new pelvic health physiotherapy service model in the Kimberley region of Western Australia, undertaken from July–December 2021. The objective of this evaluation was to document patient and service outcomes, consumer satisfaction and key stakeholder feedback, to guide ongoing need and development of such a service. A total of 113 referrals were managed by the new service, resulting in over 199 appointments and involving 77 patients. Many of the 60 patients who attended their booked appointments had significant symptoms and most (76.7%) had experienced symptoms for more than one year. Consumer feedback was positive, and all key stakeholders reported it was either moderately, very, or extremely important that the new service continue. This evaluation demonstrated a clear need and support for pelvic health physiotherapy services in the region, and documented a successful model of care, working alongside the existing generalist physiotherapy model. Future priorities are to implement culturally-informed models of pelvic health care to improve access for Aboriginal and Torres Strait Islander people with pelvic health conditions, and to examine other service models that improve access to pelvic health physiotherapy in under-served regions.

Keywords pelvic floor dysfunction, pelvic health physiotherapy, models of healthcare, rural and remote Australia.

INTRODUCTION

Pelvic health conditions are a significant health problem globally. Approximately 25–45% of women and 5–32% of men experience urinary incontinence (UI), 10–20% of adults experience overactive bladder (OAB) (urinary urgency, frequency and nocturia) and 5–10% of women experience pelvic organ prolapse (POP).¹ Additionally, 25% of women² and 8% of men³ experience persistent pelvic pain. UI is known to impact negatively on one's ability to participate in household, work, physical, social and sexual activities; as well as sleep; energy and emotional status.⁴ POP can cause bladder, bowel and sexual dysfunction, and impact negatively on quality of life and psychosocial well-being.⁵ Urinary and faecal incontinence are major risk factors for admission to an aged care facility.⁶ Thus, pelvic health conditions can have substantial physical, functional, social and emotional impacts across the lifespan.

In a recent Australian study on pelvic floor health in community dwelling people aged 40–75 years, 65% reported at least one bladder symptom and 35% reported stress urinary incontinence.⁷ Existing evidence suggests the burden of pelvic health conditions is higher in rural and remote areas and under-addressed.^{8,9} In the Kimberley region of Western Australia, of which Aboriginal and/or Torres Strait Islander people are approximately 40% of the whole population,¹⁰ a study among older Aboriginal people found 36% of those aged 45 years and older, and 50% of those over 80 years old reported urinary incontinence.⁸ A 12-month audit in the Northern Territory suggests female UI is underreported, accounting for only 3% of gynaecology consults, and likely undermanaged. For example, only 19% of those with UI appropriate for a trial of conservative management were formally referred to pelvic health physiotherapy.⁹

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Pelvic health physiotherapy refers to the assessment and management provided by a physiotherapist with additional training in managing pelvic health conditions. Pelvic health physiotherapy, including supervised pelvic floor muscle training and bladder training, is considered best practice and first line management of many pelvic health conditions including UI, OAB and POP.¹¹ Pelvic health physiotherapists are also recommended in the multi-disciplinary management of persistent pelvic pain,¹² and in the care following an obstetric anal sphincter injury (OASI).¹³

Accordingly, the role of physiotherapy in the management of pelvic health conditions is expanding. Around Australia, some health services have successfully established advanced scope physiotherapy clinics,¹⁴⁻¹⁶ whereby appropriate urology or gynaecology referrals are redirected to a physiotherapist with advanced training for initial assessment and a period of conservative management. These models are based on extended scope allied health service models and represent a cost-effective and consumer accepted alternative to the usual medical model of care.¹⁷ However, these models have been established in metropolitan centres or large regional facilities; little is known about the adaptation of such models in rural and remote areas of Australia, such as the Kimberley.

Access to any physiotherapy in remote Australia is limited; there is less than half the employed physiotherapy full time equivalent (FTE) staff per 100,000 in *very remote areas* (45.5) compared to the *major cities* (101.5).¹⁸ Access to pelvic health physiotherapy is likely to be even lower because of the limited availability of physiotherapists with additional pelvic health training. Further, those living remotely have higher rates of health risk factors and a higher burden of disease, and healthcare is usually provided over a greater geographical area.¹⁸

In Western Australia (WA), the WA Country Health Service (WACHS) provides freely available, public health services, including allied health services, to regional, rural and remote WA. Allied health services, including physiotherapy, are often generalist (meaning they have a broad scope of practice as opposed to single specialty area), based at a regional centre and travel to outlying towns and communities. Within the WACHS regions, people requiring public physiotherapy care for pelvic health issues are usually seen by physiotherapists working in generalist positions, who may not necessarily have additional training in pelvic health care. Many people in country WA may therefore be unable, or have limited access to, best practice conservative management for pelvic health conditions.

To maximise evidence-based care for pelvic health conditions in a rural and remote setting, the WACHS Kimberley physiotherapy departments have initiated an alternative pelvic health physiotherapy service model. This article outlines a model of pelvic health physiotherapy in a remote region of WA, describing patient and service outcomes, consumer satisfaction and stakeholder feedback in order to guide future delivery of similar services.

METHODOLOGY

Setting

The Kimberley is the northern most region of WA, encompassing an area of 424,517 square kilometres⁹ and has a population of approximately 34,000, with 41.1% identifying as Aboriginal and/or Torres Strait Islander.¹⁰ According to the Australian Statistical Geographical Standard Remoteness Areas (2016), the entire region is classified as Remote or Very Remote²⁰ (see Figure 1).

Public physiotherapy services are situated in the largest three Kimberley towns, Broome, Derby and Kununurra, with outreach services provided to smaller towns and communities within their respective local government areas. The WACHS Kimberley pelvic health physiotherapy service initiative, provided a regional dedicated service for the assessment and management of pelvic health conditions.

A part time (0.6 FTE) clinician (Dwyer), with post-graduate qualifications in pelvic health physiotherapy, was based in Kununurra and provided regular clinical services to Broome, Derby, Fitzroy Crossing and Halls Creek. To minimise travel time, a monthly five-day circuit, by light plane, was utilised to travel to the four other major sites across the region (approximately two hours of travel time to each location). To reduce costs, travel was undertaken on flights that were already being chartered by the regional health service, when possible. Face-to-face clinical consults were offered in Kununurra and during the monthly trips to other sites, and appointments via phone and telehealth services were offered between face-to-face consults, as required. Visits from Kununurra to smaller sites and communities, occurred when there was enough demand.

This quality improvement project evaluated the new pelvic health physiotherapy service model using quantitative and qualitative methods, from July–December 2021. Data was captured from commencement of the service using a range of routinely collected information, including service and patient-related information. Key stakeholders were invited to provide feedback after approximately five-months duration of the new service model.

Ethical considerations

This project did not differ from routine clinical care or health service quality improvement. Approval was received from the Low & Negligible Risk Subcommittee of the WACHS Human Research Ethics Committee (LNRP 2021.09).

Service-related information

Service-related information was collected for accepted referrals to, and related appointments for, the new pelvic health physiotherapy service over the service evaluation period. Service-related information was collected using the clinical application Web Patient Administration System (Webpas)²¹ used in the region

and included: referral numbers and waiting times to pelvic health physiotherapy service; appointment attendance and service mode; appointment attendee demographics (service site, gender, age, ethnicity) and appointment discharges with occasions of service.

Patient-related information

All patients were given the Participant Information and Consent Form (PICF) at their first presentation, or as soon as practically possible. The PICF provided

an overview of the Quality Improvement (QI) Project, was supported by a verbal explanation and patients were given the opportunity to ask questions. Patients were able to provide consent for their de-identified patient-related data to be used for the purpose of the QI project.

Female patients who attended an initial pelvic health physiotherapy appointment during the new service initiative were asked to complete the Australian Pelvic

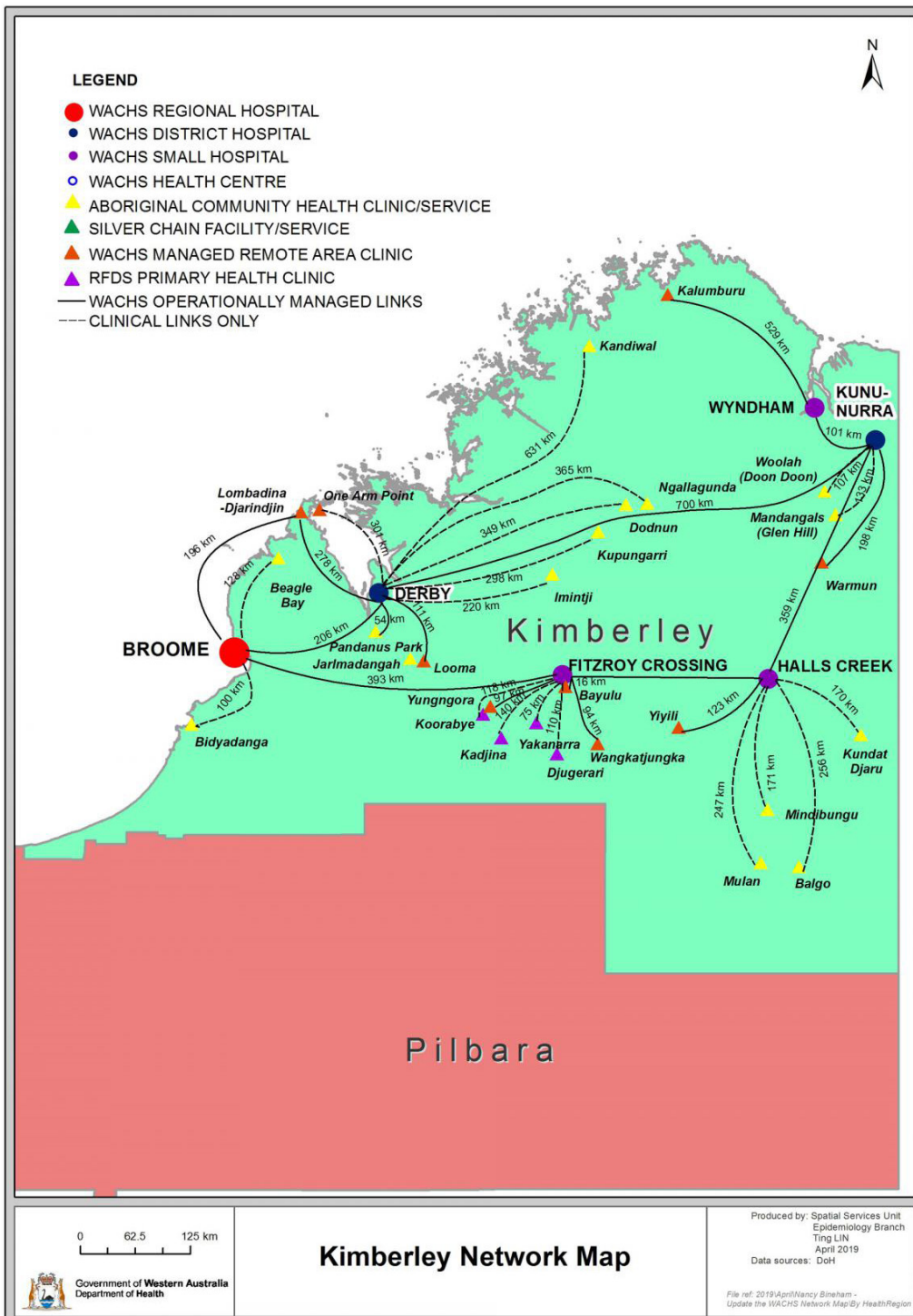


Figure 1. Kimberley Network Map (Page 5)
 Accessed: WA Country Health Service – Kimberley, 06/06/2023

Floor Questionnaire (APFQ).²² The self-administered APFQ has been validated²³ and is widely used in routine clinical practice. The questionnaire includes 42 questions relating to four domains: bladder (15 questions), bowel (12 questions), sexual function (10 questions) and prolapse symptoms (5 questions), covering symptom severity, impact on quality of life and symptom bothersomeness. Each domain score is divided by the number of questions in that domain and multiplied by 10 to give a value between 0 and 10 for each domain, and a total score out of 40 (or 30 if not sexually active). Higher scores indicate higher symptom severity.

All patients were invited to complete the Kimberley Population Health Unit (KPHU) Customer Satisfaction Survey (CSS) (Appendix 1) on at least one occasion during their clinical journey. The KPHU CSS includes six 5-point Likert scale questions, five yes/no questions, one multiple choice question and one free text question. This survey is readily available in most KPHU clinical areas.

Broad symptom profile information was also collected by the treating physiotherapist including primary diagnosis (bladder/bowel/prolapse/pain/sexual dysfunction) and duration of symptoms.

Stakeholder feedback

Key stakeholders included obstetric and gynaecological consultants, general practitioner obstetricians, general practitioners, generalist physiotherapists, clinical midwives (hospital and community based), practice nurses and Aboriginal Allied Health clinical support staff. Feedback was sought from at least one key stakeholder at each of the included Kimberley sites.

Stakeholder consultation was sought via an anonymous online survey administered using Qualtrics (Qualtrics, Provo, UT),²⁴ after approximately five months of the new service initiative. The survey included brief introductory information, asked the respondent's profession and six questions relating to the new service model (eg benefits and potential improvements of the new service, see Appendix 2).

Data Management and Analysis

Quantitative data were entered into SPSS version 24 (Armonk, NY: IBM).²⁵ Descriptive statistics were used to summarise service-related data and patient demographic information. The APFQ was summarised using mean and standard deviation (SD) for each domain and total score. Quantitative data of the CSS and key stakeholder feedback was summarised using the mean, SD and median of Likert scale items, percentage answered yes to yes/no questions, and frequencies for the multiple-choice question and profession. Qualitative data from the CSS and key stakeholder surveys underwent thematic analysis by organising data into common theme areas. This was initially undertaken by one author (Dwyer). A summary of themes was then discussed between authors, and a back-and-forward process between summary and the data, as a way to examine and challenge findings

was utilised, and resulted in agreed upon thematic categories.

RESULTS

Service-related information

Referrals for pelvic health conditions continued to be directed to physiotherapy departments within each town and forwarded to the pelvic health physiotherapy service, based on collaboration with generalist physiotherapists and agreed referral criteria, depending on the local physiotherapy skillset. For two of the regional departments (Derby and Kununurra) referral criteria included referrals for management of any symptoms of pelvic floor muscle dysfunction. The third department (Broome) chose to continue to manage this caseload locally and refer clients with complex pelvic health conditions to the new service (for example, multiple pelvic health conditions or refractory persistent pelvic pain). At the commencement of the project, there were 71 existing referrals (waiting and active) being managed by the treating physiotherapist and continued into the dedicated service, as they either met referral criteria (Derby & Kununurra) or for patient continuity of care (Broome). During the service evaluation period 42 new referrals to the dedicated service were received (Table 1). Referral waiting times until first appointment ranged from 0–476 days (Table 2), noting that there were 36 waiting referrals at the commencement of the service evaluation period.

A total of 199 appointments were booked during the service evaluation period; 21 in Broome (10.6%), 67 in Derby and Fitzroy Crossing (33.7%), and 111 in Kununurra and Halls Creek (55.8%). The mode of service delivery for booked appointments was in person (175, 87.9%), telephone (22, 11.1%) or home visit (2, 1%). Most appointments were attended (120, 60.3%), 51 (25.6%) were not attended and 28 (14.1%) were either cancelled or rescheduled. Of the 120 attended appointments, 15 resulted in the referral being closed due to treatment completion. Treatment was deemed complete after 1–10 appointments (average 3.6) for those referrals closed during the service evaluation period. Of the 51 non-attended appointments, six resulted in the referral being closed due to local discharge policy (three non-attended appointments and an inability to contact the patient via two different methods). In addition, 16 referrals were closed without an appointment as services were declined, or the patient had moved away from the Kimberley; this was called an 'admin discharge', (see Table 2).

Patient related information

Basic demographic information of the 77 individual patients that had booked appointments during the service evaluation period is captured in Table 3. Most patients were female, age ranged from 15–95 years and 39% identified as Aboriginal and/or Torres Strait Islander. Aboriginal and/or Torres Strait Islander patients accounted for 34% of the 120 attended appointments and 65% of the 51 non-attended appointments. Of the 60 patients who attended appointments, bladder

Table 1. Referral numbers prior, during and after dedicated pelvic health physiotherapy service evaluation period

Site	Number of existing referrals at start of evaluation period	Number of referrals received during evaluation period	Number of referrals closed during evaluation period	Number of existing referrals at end of evaluation period
Broome	11: 10 active (91%) 1 waiting (9%)	1 (total 12)	7: 2 treatment complete 4 admin discharge 1 discharge policy	5 (decreased 54.5%): 5 active (100%)
Derby and Fitzroy Crossing	26: 13 active (50%) 13 waiting (50%)	17 (total 43)	11: 4 treatment complete 5 admin discharge 2 discharge policy	32 (increased 23.1%): 20 active (62.5%) 12 waiting (37.5%)
Kununurra and Halls Creek	34: 12 active (35%) 22 waiting (65%)	24 (total 58)	19: 9 treatment complete 7 admin discharge 3 discharge policy	39 (increased 14.7%): 26 active (66.7%) 13 waiting (33.3%)
Total	71: 35 active (49%) 36 waiting (51%)	42 (total 113)	37: 15 treatment complete 16 admin discharge 6 discharge policy	76 (increased 7.0%): 51 active (67.1%) 25 waiting (32.9%)

Active = patient had already had at least one booked appointment; waiting = waiting for first appointment; referral closed = no longer requiring service for one of three reasons: treatment complete (symptoms resolved or referred for further management elsewhere), admin discharge or discharge policy.

Table 2. Referral wait times (days) for waiting referrals at start, to booked first appointment during and waiting referrals at end of service evaluation period

Site	Referral wait times at start of evaluation period			Wait times to booked first appointment, during evaluation period			Referral wait times at end of evaluation period		
	Number of referrals	Mean	Range	Number of referrals	Mean	Range	Number of referrals	Mean	Range
Broome	1	167		2	138	7-269	0		
Derby and Fitzroy Crossing	13	101.5	21-348	16	117	1-476	12	92	15-287
Kununurra and Halls Creek	22	136.9	24-353	32	143	0-426	13	121	16-358
Total	36	124.9	21-353	50	135	0-476	25	107	15-358

symptoms were the most common primary complaint (29, 48.5%) and most had experienced symptoms for more than one year (46, 76.7%).

A total of 40 patients were provided with the PICF; 38 provided consent for their additional patient-related information to be included, one declined and one did not return the form following a telephone appointment. The PICF was not provided to 20 patients due to time constraints during the appointment or when deemed inappropriate (eg identified need to address patient safety, clinical escalation or reduced service engagement). The Australian Pelvic Floor Questionnaire (APFQ) and the Consumer Satisfaction Survey (CSS) were completed by 25 and 20 of the consenting patients, respectively. Both the bladder and bowel symptom subscales on the APFQ had equal mean scores of 2/10, sexual function 1.9/10 and

prolapse 1.2/10 (potential range of 0-10, with higher scores indicating higher symptom severity). Total mean scores were 6.2/40 for those completing all subscales and 10.2/30 for those not sexually active (Table 4).

The CSS demonstrated most patients scored 1/5 (happy) on the Likert Scale questions relating to hours of service, privacy, confidentiality, involvement in care, would recommend, and helpful staff, and most patients answered Yes on the questions relating to awareness of rights, involvement of carer in decisions and expectations. There were seven additional positive feedback comments and one constructive suggestion, (Table 5).

Stakeholder Feedback

Stakeholder feedback was sought from 19 stakeholders across the region; 14 commenced the survey and 11

Table 3. Patient demographics

Demographics (n = 77)		N (%)
Gender	Female	72 (94)
	Male	5 (7)
Age	15-24	8 (10)
	25-34	24 (31)
	35-44	11 (14)
	45-54	10 (13)
	55-64	16 (21)
	65-74	5 (7)
	75-84	2 (3)
	85-95	1 (1)
Ethnicity	Aboriginal and/or Torres Strait Islander	30 (39)
	Non Aboriginal and/or Torres Strait Islander	47 (61)
Symptomology (n=60)		N (%)
Primary symptom	Bladder	29 (48)
	Bowel	6 (10)
	Prolapse	7 (12)
	Pain	7 (12)
	Sexual	4 (7)
	Postnatal or OASI	6 (10)
	Pre/post RP	1 (2)
Duration of symptoms	<6 months	9 (15)
	6-12 months	3 (5)
	13-24 months	9 (15)
	2-5 years	15 (25)
	6-10 years	9 (15)
	>10 years	11 (18)
	Other	4 (7)
	- unsure (many years, long time)	2 (3)
- resolved	1 (2)	
- asymptomatic (pre radical prostatectomy)	1 (2)	

completed the survey and were included in the analysis. Stakeholders who completed the survey included physiotherapists, midwives, general practitioners and one non-specified profession, and all were aware of the new service model. Similar themes arose in response to the questions *What has changed* and *What are the benefits* of the new service model: improved healthcare/patient outcomes, access to a dedicated pelvic health physiotherapy service and increased professional development and education opportunities for physiotherapists and other health professionals. An additional benefit reported was the more specialised physiotherapy career pathway, in a rural setting. The

Table 4. Australian Pelvic Floor Questionnaires (APFQ)

Symptoms Subscale	Score mean (SD)	Score range
Bladder (n=25)	2.0 (1.7)	0-6.9
Bowel (n=25)	2.0 (1.4)	0-5.3
Prolapse (n=25)	1.2 (1.7)	0-5.6
Sexual Function (n=21)	1.9 (1.8)	0-5.7
Total (including all subscales) n=21; n=25	6.2 (3.0); 6.8 (3.8)	1.3-14.8; 1.3-17.2
Total (without sexual function subscale) n=4	10.2 (5.8)	3.0-17.2

Note: 3 questionnaires were completed after the commencement of pelvic health physiotherapy interventions.

areas for improvement included the referral pathway to access the pelvic health physiotherapy service and the organised and continued professional development of generalist physiotherapists. Additional comments were grouped into the themes of continuing the dedicated service model, continuing the development of generalist physiotherapists and clinician feedback, (Table 6).

DISCUSSION

Overall, the results of this project demonstrated a clear need for pelvic health physiotherapy services in the Kimberley. The new service received a substantial number of referrals, there were significant wait times to first appointment, and patients presented with long standing and complex pelvic health symptoms. The new service was supported by both patients accessing it and key stakeholders. While some longer wait times reflect being unable to contact some patients, and the average waiting time reduced over the service period, given there were 36 waiting referrals at the start of the service initiative, analysis over a longer period may assist to determine true demand and whether additional resources are required or alternative service models need to be considered.

The APFQ results suggest patients accessing the new service had symptoms at similar or just below the severity of a population presenting for their first appointment at a tertiary urogynaecological referral unit,²³ highlighting that patients were presenting with significant symptoms. The majority of patients seen during the service evaluation period (66.7%) had symptoms for longer than one year, which supports the need for a timely service, but may also suggest patients are either under reporting symptoms or referrals are delayed.⁹ Consumers demonstrated high rates of satisfaction with the new service model, and all key stakeholders reported it was moderately to extremely important that the service continue, thus the service need was also supported by consumers and stakeholders.

The Kimberley, and most of regional Australian public allied health services, utilise a generalist clinician

Table 5. Consumer Satisfaction Survey (CSS)

Likert Questions	1 😊	2	3	4	5 😞	Missing	Mean (SD)	Median
Q1 Hours of Service suited?	18	1	1	0	0	0	1.2 (0.5)	1
Q4 Privacy and dignity maintained?	17	2	1	0	0	0	1.3 (0.9)	1
Q5 Info kept confidential?	19	1	0	0	0	0	1.2 (0.9)	1
Q6 Involve you in care decisions?	18	1	0	0	1	0	1.3 (0.9)	1
Q9 Recommend to a friend?	17	0	0	0	1	2	1.2 (0.9)	1
Q10 Staff helpful?	16	1	0	0	1	2	1.3 (1.0)	1
Yes / No Questions	Yes (%)		No (%)		NA (%)		Missing (%)	
Q2 Aware of rights?	20 (100)		0		0		0	
Q3 Seen rights?	9 (45)		11 (55)		0		0	
Q7 Involve carer in decisions?	6 (30)		0		14 (70)		0	
Q8 Involve you in care decisions about child?	3 (15)		0		16 (80)		1 (5)	
Q11a) Expectations met at reception?	15 (75)		0		3 (15)		2 (10)	
Q11b) Expectations met with wait times?	14 (70)		0		3 (15)		3 (15)	
Q11c) Expectations met with Ax and care?	16 (80)		0		0		4 (20)	
Q11 Additional comments	Comments (n)		Comments (quote)					
Positive feedback re: service – professional, informative, holistic.	7		Very professional, explains things clearly, caring approach Friendly staff, caring and professional, you have a lovely team (from Q13)					
Q13 Other suggestions	Comments (n)		Comments (quote)					
Constructive feedback re: consumer engagement.	1		Visit clients in community and show you are interested in their health issues. They do not always come to clinic.					

Table 6. Stakeholder feedback

		n	%
Survey completion	Surveys sent	19	100%
	Complete surveys	11	57.9%
	Incomplete Surveys	3 (not included)	15.8%
Profession	Physiotherapist	5	45.4
	Midwife	2	18.2
	GP	3	27.3
	Other (did not specify)	1	9.1
Aware of service?	Yes	11	100%
Importance of continuing?	Not at all important	0	0
	Slightly important	0	0
	Moderately Important	1	9.1
	Very Important	2	18.2
	Extremely important	8	72.7

Table 6. Stakeholder feedback continued

What has changed?	Comments (n)	Comments (quote)
Improved healthcare / access to healthcare	6	“Known referral pathway for postnatal women” (midwife) “..increased services for those with pelvic health complaints” (physiotherapist)
Dedicated Pelvic Health PT service	3	“Clients can now get timely specialist pelvic health physio treatment...” (physiotherapist) “I can refer patients specifically to see Pelvic Health Clinician for women’s health physio issues.” (general practitioner)
Education to other health care providers.	2	“PD opportunities, dedicated case conferencing with pelvic health physio, regional QI initiatives commenced” (physiotherapist)
Generalists not seeing Pelvic Health clients	1	“.. and generalists no longer see pelvic health clients” (physiotherapist)
What are the benefits?	Comments (n)	Comments (quote)
Improved patient outcomes	8	“Improved Quality of life. ‘Closes the gap’- women can stay on country to access care” (midwife) “More women can access support for problems associated with child birth and prolapse issues.. ..actually talk to someone who understands” (other)
Dedicated Pelvic Health PT Service	4	“The community are able to access the specialist skills that are required for this clinical area” (physiotherapist) “Support, treatment & the correct advice for women’s health in the Kimberley region” (midwife)
Career progression in rural setting / professional development	4	“Shows the potential for career growth in the rural/ remote setting” (physiotherapist) “Upskilling of local therapists. Increased profile of pelvic health physiotherapy” (physiotherapist)
Revised regional service	2	“Whole of service planning. Measures to standardise aspects of service across region” (physiotherapist)
What could be improved?	Comments (n)	Comments (quote)
Continue service / nothing	6	“Keep service going in Kimberley and east Kimberley” (other)
Referral processes	3	“Streamline e-referral process directly to Pelvic Health Clinician - at present these referrals are through the general physio department which seems not to be passed on to this specialised women’s health physio” (general practitioner)
Generalist physiotherapy staff upskilling	2	“Organised PD sessions/joint appointments for staff upskilling” (physiotherapist)
Additional Comments	Comments (n)	Comments (quote)
Continue dedicated Service	3	“Women need services like this to support women’s health, make women feel more confident in dealing with issues” (other)
Continue generalist Physio development	1	“Continue to develop a strong shared-care pelvic health service and increase the profile of pelvic health physiotherapy across the region” (physiotherapist)
Clinician feedback	1	“Pelvic Health Clinician is wonderful with the women and understands the challenges in the Kimberley” (midwife)

service model²⁶ because of the broad scope of practice and the relatively low physiotherapy workforce relative to the population size.¹⁸ However, in relation to pelvic health physiotherapy, the teaching of skills in undergraduate training programs across Australia is highly varied,²⁷ and not taught at a level which

enables graduates to practice clinically in this area.²⁸ Clinicians require additional professional development or education to do so,²⁸ however developing advanced skills in pelvic health care is challenging when physiotherapists have a generalist workload. Indeed, the large number of existing referrals at the start of

this service initiative is most likely due to a lack of generalist physiotherapists with the skills to manage pelvic health conditions. Offering a regional dedicated pelvic health physiotherapy service, alongside local generalist physiotherapy services is one way to ensure this service need is met in rural and remote areas.

This service model initiative was feasible because a physiotherapist with post graduate training in pelvic health, was located in the region (Dwyer), which may not be the case in other areas. Alternative service models, such as telehealth may be an option for regions to access physiotherapists with advanced pelvic health knowledge based elsewhere, and has been reported to be effective and a cost-effective way to manage pelvic floor conditions.^{29,30} However, a recent survey on telehealth and the provision of pelvic health physiotherapy, highlighted several challenges with this model, including the safety and effectiveness of assessments via telehealth and access to reliable internet in rural and remote areas.³¹ Further, in the context of the Kimberley, we posit that face-to-face care is optimal to manage many pelvic health conditions. Telehealth models were utilised in the region by necessity during Covid-19 restrictions for the six months immediately following the service evaluation period; reduced attendance rates were noted and a number of patients declined telehealth services citing a preference to wait for in-person appointments. An appreciation of the local context, and ease of liaising with other care providers are additional benefits of a local, face-to-face service, when possible.

A higher proportion of non-attendance for patients identifying as Aboriginal and/or Torres Strait Islander was noted, suggesting the accessibility and cultural appropriateness of this service warrants further investigation to reduce access barriers for Aboriginal and Torres Strait Islander people. At all sites the service ran out of the local hospital, whereas one consumer feedback comment suggested visiting patients in the community. While privacy in the community setting has been identified as a possible barrier to providing pelvic health physiotherapy services, partnering with local Aboriginal Community Controlled Health Care Services can improve access to rehabilitative healthcare.³² Given the high disease burden of pelvic floor conditions for Aboriginal women and recommendations for increased education and access to pelvic floor physiotherapy,³³ this is a future priority.

In this quality improvement project, a possible limitation was that the project lead (Dwyer) was also the physiotherapist trialing the new service model, thus there is the potential for bias. Attempts were made to mitigate this by including service-related information, self-reported patient related information (APFQ), anonymous consumer feedback (KPHU CSS), and online anonymous data collection for stakeholder feedback. As the CSS was completed by only 25 of the 60 patients seen (42%) and the stakeholder feedback was completed by 11 of the 19 people it was sent to (58%), all perspectives may not have been captured.

CONCLUSION

A dedicated pelvic health physiotherapy service model was successfully initiated in the Kimberley, meeting an unmet need and receiving positive consumer and stakeholder feedback. Providing best practice care in a remote setting is not without challenges; future consideration should include examining other service models to maximise access to pelvic health physiotherapy in underserved areas, and exploring the cultural appropriateness of pelvic health care.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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Appendix 1. Kimberley Population Health Unit Customer Satisfaction Survey





Government of Western Australia
WA Country Health Service

Customer Satisfaction Survey  2. Partnering with Consumers

The staff of the Kimberley Population Health Unit strive to give the best possible service to our clients. We need to know what you think that we are doing well to help maintain a high standard of service. When things do not go as well as they should, we also need to know so that we can make improvements. We would greatly appreciate your help by telling us about your recent visit to the clinic. Please take some time to complete the survey, should you require some assistance we will provide someone to help, or you can ask a relative or friend.

1. Do you find our hours of service meet your needs?

 1 2 3 4 5 

2. Did you know that as a client of community based services you have rights and responsibilities?

Yes No

3. Have you seen a copy of these rights and responsibilities?



Yes No

(Rights and Responsibility Brochures are available at reception in your clinic)



4. Do you feel your privacy and dignity are maintained by staff?

 1 2 3 4 5 

5. Do you feel the information you provided to us is kept confidential?

 1 2 3 4 5 

6. Do staff involve you in decisions made about your care?

 1 2 3 4 5 

7. Do staff involve your carer in decisions made about your care?

Yes No Not Applicable

8. Do staff involve you in decisions about the care of your child?



Yes No Not Applicable

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Customer Satisfaction Survey

continued

9. If a friend needed health care, would you recommend our service?


1
2
3
4
5


10. In general how helpful was the staff?


1
2
3
4
5


11. When you visited any of our clinics, did the following meet with your expectations?

a) Response at Reception	Y	N	N/A
b) Waiting times	Y	N	N/A
c) Assessment and care provided by:			
Aboriginal Health Worker (AHW)	Y	N	N/A
Nurse	Y	N	N/A
Doctor	Y	N	N/A
Allied Health Worker	Y	N	N/A

Comments.....

12. What health promotion education sessions do you think would be useful to your community?

Tick all that apply:

Health eating
 Healthy living
 Sexual health
 Child health
 Mums and Bubs
 Women's health
 Men's health
 Alcohol and drugs
 Quit smoking
 Mental health

13. Any other suggestions for ways to make things better in our service delivery?

Comments

Your time and effort to complete this survey will allow us to evaluate the standards of client care and implement any changes required to improve our service. Please complete and return this form to the suggestion box in the clinic. Thank you for your participation.

Appendix 2 Key Stakeholder Feedback Survey

Brief introductory information

Thank you for taking the time to complete this short survey.

As you are hopefully aware, the Kimberley physiotherapy departments are currently trialing a slightly different approach to the management of the pelvic health physiotherapy caseload. Previously this caseload was managed by each department, with varying levels of skills/experience. At present we are trialing the provision of these services by a dedicated pelvic health physiotherapist, with relevant post-graduate qualifications, at most sites in the Kimberley.

As part of the evaluation of this service trial we are seeking feedback from relevant health professionals via this short, anonymous online survey. Questions have been kept simple and to one page, however we encourage your detailed responses. The more information you can provide, the more we can understand this service, its value and how it can be improved. The collective information provided in this survey may be disseminated (eg presented/published).

Please note that as this survey is anonymous, once answers are submitted, they will not be able to be withdrawn. If you have any questions or concerns regarding this survey, please do not hesitate to contact Pelvic Health Physiotherapy Project Lead, Stephanie Dwyer on stephanie.dwyer@health.wa.gov.au

Survey

What is your profession? (Generalist medical practitioner / specialist medical practitioner / nursing professional / midwifery professional / physiotherapist / other)

The following questions relate to the new Kimberley Pelvic Health Physiotherapy service

Were you aware of this new service trial? (yes/no)

What has changed as a result of the new Pelvic Health Physiotherapy service? (Free text)

What are the benefits? (Free text)

What could be improved? (Free text)

Please rate how important you think it is that this service is continued? (Not at all / slightly / moderately / very / extremely)

Do you have any additional comments or feedback? (Free text)

CONCLUSION

Thank you for completing this survey, your time and responses are very much appreciated. If you have any questions relating to this survey or the Kimberley Pelvic Health Physiotherapy service trial, please contact Stephanie Dwyer on stephanie.dwyer@health.wa.gov.au.

Techniques for total excision of retropubic and transobturator midurethral mesh slings

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ABSTRACT

For management of mesh complications relating to full-length midurethral slings, a number of techniques for total excision of mesh have been reported. Surgical excision is invasive due to scarring and anatomical location, requiring effective techniques to avoid complications, such as neurovascular injuries or incomplete excision of mesh when total mesh excision is planned.

Detailed surgical technique descriptions of total excision of retropubic midurethral mesh slings and transobturator midurethral mesh slings are presented, including surgical points. In addition, illustrations provide an accurate view of the path of midurethral mesh slings in relation to anatomic considerations.

The described techniques have been utilised for the total excision of over 150 midurethral mesh slings, with the authors avoiding any unplanned incomplete mesh excisions.

For total excision of retropubic midurethral mesh slings, an open retropubic technique combined with vaginal dissection, allows for effective access to the vaginal, retropubic and subcutaneous portions of the sling, without the addition of risks related to intraperitoneal access with pneumoperitoneum and Trendelenburg positioning. Transobturator midurethral mesh slings can be located and completely excised through vaginal and inner thigh/groin incisions, with good cosmesis.

Keywords excision, mesh, midurethral sling, retropubic, transobturator

INTRODUCTION

The utilisation of midurethral mesh slings in the management of stress urinary incontinence in women, has resulted in the emergence of some mesh-related complications necessitating comprehensive techniques for their complete excision. This article provides an in-depth description of an effective surgical method for the total removal of both the full-length retropubic and transobturator midurethral mesh slings. The potential advantages and justifications supporting these techniques are also discussed in detail.

Over the past 25 years, the management of stress urinary incontinence by utilising synthetic mesh as midurethral slings have had commendable success rates. Nonetheless, mesh-related complications have emerged as a significant global concern and legal issue over the last decade. Although certain complications can be managed conservatively, some of the issues, such as infected mesh and symptomatic mesh erosion into the bladder, urethra and vagina, necessitates surgical interventions. However, these interventions are not without any considerable risks and complications.

The spectrum of complications associated with total mesh sling removal includes the universal hazards of anaesthesia, bleeding, infection, and thrombotic events. Additionally, specific complications are associated with the anatomical and functional intricacies within the surgical areas, including urinary tract injury, formation of hematomas, and nerve damage resulting in chronic pain. The removal of the mesh sling is also anticipated

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to lead to the recurrence or worsening of stress urinary incontinence. Therefore, the management strategies for mesh complications related to the complete removal of mesh slings requires careful consideration and thorough discussion with patients. All patients require extensive counselling and multidisciplinary team assessments prior to proceeding with mesh removal. All management options including non-surgical, or surgical, with either partial removal or complete removal, need to be presented to allow for informed consent.

The literature reports various techniques for partial and total removal of mesh slings, including vaginal, open laparotomy, and endoscopic removal via cystoscopy, laparoscopy, and robotic approaches.¹⁻¹⁶ While the procedures for inserting retropubic or transobturator mesh slings are classified as minimally invasive, the comprehensive removal of these slings can prove substantially more intricate, necessitating more extensive dissections.

The objective of this paper is to describe effective surgical techniques for the complete removal of both retropubic and transobturator full-length midurethral mesh slings. These techniques take into consideration variations in sling type and placement.

PROCEDURE

Excision of retropubic mesh sling

The excision of a full-length retropubic mesh sling is a surgical procedure aimed at addressing complications associated with mesh implants. This technique is particularly valuable when complete removal of the mesh, including vaginal, retropubic, and subcutaneous components, is desired. This section provides a detailed description of the excision process, highlighting its key steps and potential advantages, and includes an illustration of the path of a retropubic midurethral mesh sling (see Figure 1).

Surgical preparation and positioning: The patient is positioned in lithotomy, and both the abdomen and vagina are prepped and draped. A vaginal retractor with hooks is employed to ensure optimal vaginal exposure. In cases where total mesh removal is pursued, the vaginal, retropubic, and subcutaneous segments must be removed.

Vaginal dissection: Commencing with a transverse midurethral incision, the underlying mesh sling is identified. Diluted local anaesthetic with adrenaline is infiltrated to facilitate dissection and assist with haemostasis. The sling is dissected free of surrounding tissue across the midline and the dissection is continued laterally in both directions. The mesh sling may be divided midline (with a suture placed at each cut end to assist with identification) to improve traction, or left intact. As the mesh extends into the retropubic space, the perineal membrane is punctured at this point with scissors, granting access to the retropubic region. The vaginal portion of the mesh sling is thus free of the vagina and no longer adherent to the perineal membrane.

Abdominal dissection: Through a low transverse suprapubic skin incision and a transverse incision through the rectus sheath, the rectus muscles are separated and the retropubic space accessed. Retractors can be used to facilitate exposure. The gloved hand is often employed to access the retropubic space, and sharp dissection may be necessary in cases of adhesions. Retropubic mesh arms adherent to the posterior pubic bone are identified. The retropubic mesh can then be grasped with an artery forceps and traced/dissected up to its penetration through the rectus fascia. This may assist with identification of the supra-fascial subcutaneous portions of the mesh sling arms. Alternatively, the supra-fascial subcutaneous mesh sling arms can be directly sought by accessing the mons pubis fatty tissue below the rectus fascial incision, where the mesh would be expected to penetrate the fascia. This area can be palpated directly, or the subcutaneous tissue can be partially dissected off the underlying fascia to enhance palpation and identification of the mesh. The mesh sling's "square end" (the original cut end of the mesh sling), located within the mons pubis fatty tissue, is grasped with artery forceps. It is then dissected towards the rectus sheath, perforating it to pull the mesh end through into the retropubic space. The mesh sling is carefully dissected off the surrounding tissues and posterior pubic bone. Mesh on the bladder side may require sharp dissection or diathermy, while mesh on the pubic bone side often necessitates blunt dissection only. The mesh should then be fully mobilised and can be removed vaginally. Haemostatic matrix agents with thrombin are placed into the retropubic dissection.

Closure of incisions: The rectus sheath defects resulting from sling arm penetrations are closed at the mons pubis level. The rectus muscles are approximated using absorbable interrupted sutures, and the rectus sheath incision is repaired. The abdominal wall is closed in layers. Haemostatic agents can also be placed within

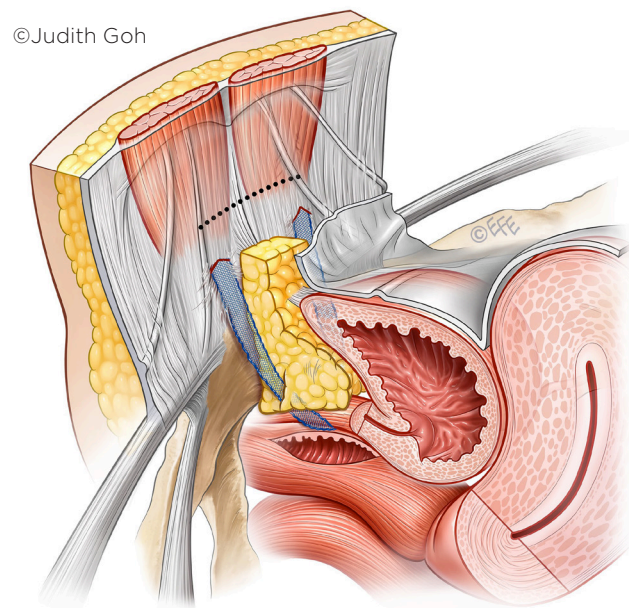


Figure 1. Path of retropubic midurethral mesh sling

the vaginal tunnels if needed, and vaginal epithelium closure is performed.

Cystoscopy and postoperative care: A cystoscopy and urethroscopy is conducted to rule out bladder and urethral injury and assess ureteric jets. A vaginal pack and catheter remain in place for 24–48 hours. Prophylactic antibiotics and antithrombotics are administered to minimise risk of postoperative complications.

Surgical considerations: Several important points deserve attention during the procedure.

- Typically, a “pseudocapsule” exists around the mesh sling, which when entered, allows for a close dissection of the surrounding tissue off the mesh. Aim to remove the mesh only, sparing as much of the native tissue as possible.
- Retropubic mesh arms are typically quite easily detachable from the posterior pubic bone surface, while careful sharp dissection is required for mesh detachment from the bladder, with potential risk of bladder injury. If bladder injury occurs, repair the bladder in 2 layers, full thickness and tension-free. A dye test should then be performed to confirm the closure is watertight. More prolonged post-operative catheterisation will be required.
- The identification of “square ends” in the mons pubis fatty tissue may be challenging as the mesh path is often variable, in particular where they are adherent to the fascial sheath at its insertion into the pubic bone. Care must be taken to avoid obturator neurovascular injury in cases of more lateral traversal of mesh arms.
- There is an increased risk of bleeding in the retropubic space when adhesions are present, with an associated increased risk of post-operative haematoma and need for blood transfusion.
- Long surgical instruments for the retropubic dissection are utilised.
- With experience and consideration of patient habitus and previous surgical incisions/scarring, the size of the supra-pubic incision can be minimised.

Advantages of the technique: A notable advantage of this excision technique lies in its extraperitoneal approach, mitigating risks associated with intraperitoneal methods. The complete abdominal segment of the mesh sling can be accessed via the retropubic incision, including portions traversing the mons pubis fatty tissue or adherent to the fascial sheath. Despite the necessary abdominal skin incision, patients typically experience a swift recovery due to the extraperitoneal approach’s inherent benefits.

Excision of transobturator mesh sling

The procedure for the excision of a full-length transobturator midurethral mesh sling involves a meticulous approach to address mesh-related complications. This section provides a comprehensive description of the surgical steps involved in the excision

process, highlighting key aspects and techniques. Two illustrations detail the path of a transobturator midurethral mesh sling (see Figures 2 and 3).

Patient positioning and preparation: The patient is placed in the lithotomy position, with the thighs not too acutely flexed. Thorough preparation and draping of the vaginal area and thighs are carried out. Utilisation of a vaginal retractor with hooks facilitates optimal exposure during the procedure.

Vaginal dissection: An anterior transverse vaginal incision is performed, usually situated in the midurethral region or over the palpable location of the sling if positioned abnormally. Following incision, the mesh sling is located and grasped using artery forceps. Local anaesthetic with adrenaline is then infiltrated around and under the mesh to facilitate hydro-dissection and haemostasis. Sharp dissection is employed to mobilise the vaginal epithelium off the underlying mesh. The dissection is conducted by inserting scissor tips between the mesh and epithelium, using slightly open scissors to gently push the tissue away. Artery forceps are used to provide traction on the mesh during dissection. The caudal and cephalad edges of the mesh

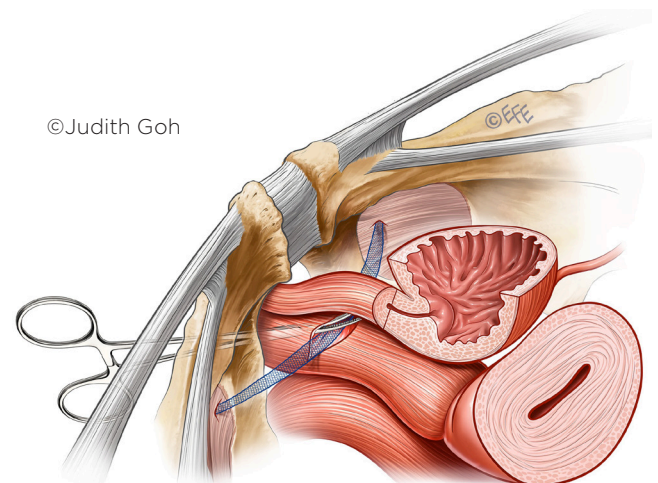


Figure 2. Path of transobturator midurethral mesh sling

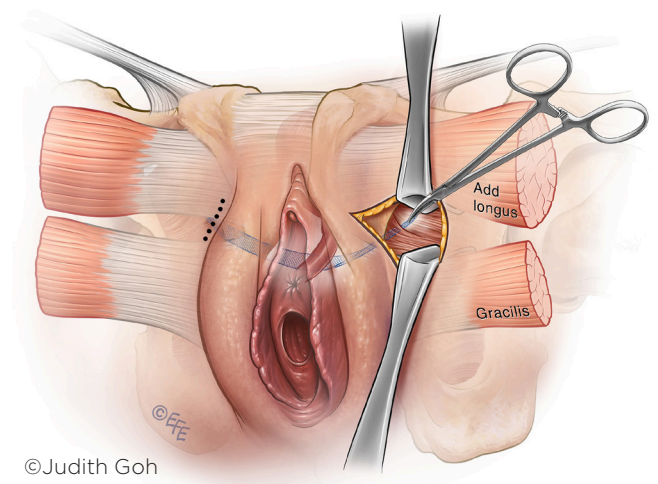


Figure 3. Transobturator midurethral sling inner thigh dissection

are exposed, and vertical passage of scissors behind the mesh in the midline frees the mesh and allows for a good grasp of the sling to assist with traction, which assists with lateral dissection on each side. There is the option to divide the mesh in the midline, utilising sutures on each end to identify the division points, for enhanced traction. Care is taken to prevent fraying or fragmentation of the mesh during these manoeuvres.

Right and left lateral vaginal dissection: The lateral dissection of the mesh sling is carried out by carefully “sliding” the scissors along the mesh, maintaining precision and control throughout the process. Additional local anaesthetic with adrenaline is infiltrated to enhance the dissection and manage haemostasis. The artery forceps, grasping the mesh, is directed outward and lateral, facilitating sharp dissection to separate the bladder and urethra from the mesh. Utilisation of a retractor laterally and superiorly further assists with exposure of the mesh, providing the necessary visualisation for careful dissection. The sharp dissection of the surrounding tissue off the mesh is extended laterally toward the obturator foramen membrane. The tip of the suction device often aids in creating exposure, assisting with better visualisation of the operative site. With the scissor tip positioned on the lateral side of the mesh as it penetrates the obturator membrane, the scissors are inserted and opened to establish an opening in the membrane. This process is then repeated on the medial side of the mesh, effectively creating openings in the obturator membrane on both sides.

Inner thigh dissection: The incision for accessing the transobturator mesh sling arms is initiated approximately 2cm below the upper edge of the adductor longus muscle. It spans 2.5-4cm, starting at around the level of the clitoris. The edges of the inner thigh incision are grasped with Allis forceps and elevated, facilitating visualisation. Diathermy is used to dissect through the fatty layer until the fascia over the muscle is reached. The fascia of the adductor longus muscle is subsequently exposed, and the gloved finger is utilised to assess whether the mesh is palpable superficial to the fascia.

Retraction with hooks contributes to exposure of the operative site. Diathermy is employed to create a 1.5cm transverse incision over the fascia, revealing the underlying muscle. The gloved finger is then employed to bluntly dissect medially and laterally, aiming to locate the space between the bellies of the adductor longus and gracilis muscles. Retractors positioned above and below the space aid in exposure, while additional blunt dissection with an artery forceps tip aids with access between the muscle bellies, improving visibility. Notably, the proximity of the gracilis neurovascular bundle should be considered, as it is located immediately lateral to the dissection site.

The gloved finger is used for palpation, allowing the identification of mesh by detecting any abnormalities between and beneath the muscle bellies. The mesh is characterised by a slightly rough, scarred, or

“tendinous” texture. Inspection tools like a nasal speculum and long, narrow retractor are valuable in scrutinising the likely mesh area. Once the mesh is located, it is grasped with long forceps, and its path is traced both laterally and medially. If the mesh traverses the adductor muscle, the muscle is split to trace up to the “square end.” A suture is placed through the mesh end for identification and traction.

During lateral tracking of the mesh, the tissue is dissected off the mesh both superiorly and inferiorly. Rotation of the artery forceps holding the mesh puts the mesh on tension, facilitating its exposure. This technique, referred to as “rotating the mesh out of the muscle”, allows the lateral portion of the mesh sling to be dissected as it tracks superficially towards the skin. The dissection continues until the “square end” is located. Mesh dissection medially ensues, using scissors and blunt gloved finger dissection, toward the lateral side of the obturator foramen. Placement of scissors between the mesh and bone, with the tip facing medially, is used in conjunction with the previously created opening in the obturator membrane. The mesh is often adherent to the bone, requiring the use of the Semb periosteal elevator for detachment. Once liberated, the mesh sling arm is removed, followed by the immediate placement of a haemostatic matrix agent with thrombin into the transobturator tunnel for haemostasis.

The same procedure is repeated on the opposite side.

Groin incision closure: Closure of the groin incisions involves interrupted dissolvable sutures transversely to the fascia, followed by vertical closure of the fatty layer and skin closure using subcutaneous sutures. Skin glue is applied for wound sealing. Careful reconstruction of the dissected area is vital to prevent tissue retraction and ensure satisfactory cosmesis.

Vaginal closure and cystoscopy: The vaginal epithelium is closed with absorbable sutures. A cystoscopy is performed to verify bladder and urethral integrity and assess ureteric jets.

Our standard post-operative care includes leaving an indwelling catheter and vaginal pack for 24–48 hours and using prophylactic antibiotics and antithrombotics. Early mobilisation is encouraged, along with a normal diet as tolerated.

Surgical considerations and key points: Successful execution of the transobturator midurethral mesh sling excision relies on attention to various surgical nuances. This section outlines essential surgical considerations and key points that contribute to the safe and effective completion of the procedure.

- 1. Timing of local anaesthetic infiltration:** It is recommended to infiltrate local anaesthetic with adrenaline only after identifying the mesh. Premature infiltration can hinder mesh identification.
- 2. Mesh identification challenges:** In situations where locating the groin mesh proves challenging, a technique involving palpation by both gloved fingers—one in the vaginal dissection and the other

in the groin—can help estimate the mesh sling's trajectory.

3. **Alternative identification approaches:** If locating the groin mesh becomes particularly difficult, progressing with dissection until the mesh exits the obturator membrane can provide a point of identification. Subsequent tracing of the sling laterally or superiorly can then be based on its determined trajectory.
4. **Cautious mesh dissection behind pubic arch:** When navigating the mesh behind the pubic arch, exercise care to avoid tearing it, as adherence at this point is common. Utilise alternating techniques involving scissors and the Semb elevator to gradually dissect the mesh from the bone. Employ the gloved finger for lateral support, while the scissors work to create separation between the mesh and bone.
5. **Safe use of Semb elevator:** During Semb periosteal elevator usage, maintain control and a firm grip on the instrument. Holding the Semb elevator with the index finger straight prevents the instrument from advancing too deeply should sudden movement occur due to mesh or tissue yielding.
6. **Refinement of bilateral groin incisions:** As experience and expertise grow, the size of bilateral groin incisions can be minimised, contributing to improved surgical outcomes.

These surgical considerations and key points are instrumental in ensuring the proficient and safe removal of transobturator midurethral mesh slings, ultimately enhancing patient care and procedural outcomes. Post-operative recovery following this transobturator excision technique is typically quite comfortable.

Variations in slings

An appreciation of the various sling characteristics and their potential variations is crucial in ensuring accurate and successful excision procedures. This section outlines key variations in sling attributes that surgeons should be mindful of when performing mesh sling excision.

- **Colour of slings:** Mesh slings can present in either clear or blue colours, depending on the specific manufacturer and date of production.
- **Transobturator sling insertion direction:** Transobturator slings can be inserted in two different directions: “out-to-in” or “in-to-out.” This choice influences the potential path that the sling takes through the transobturator region. The “out-to-in” slings tend to hug the pubic bone more closely than the “in-to-out” slings.
- **Sling configuration and position:** The sling's physical configuration can vary, with options including flat or crumpled/folded and narrow variations. Additionally, the sling's position within the vaginal space can range from superficial to deep.
- **Sling location relative to urethra:** The positioning of the sling in relation to the urethra can vary. Slings

may be midurethral or situated proximally or distally along the urethra.

- **Path through obturator foramen:** The path that the sling takes through the obturator foramen can exhibit variability. Surgeons should be prepared for diverse trajectories through this anatomical region.
- **Retropubic space path:** The path that the sling follows as it traverses the retropubic space can vary significantly. The sling's path may range from a medial trajectory to a potentially dangerous lateral orientation.

Understanding these variations in sling characteristics and potential paths is essential for surgeons performing mesh sling excision procedures. This awareness ensures adaptability and precision during excisions, contributing to favourable patient outcomes.

OUTCOMES

To date, the authors have been successful in achieving total excision of full-length retropubic and transobturator mesh slings in all cases where total excision was planned (over 150 cases), using the described techniques. This underscores its reliability and proficiency in achieving complete mesh sling removal. Further detail and follow-up of these patients is planned for a further publication.

DISCUSSION

We have found the utilisation of open and vaginal approaches for the total excision of retropubic and transobturator mesh slings to be effective. The success of these techniques hinges on meticulous dissection to identify and ensure complete removal of mesh, coupled with careful attention to haemostasis, both of which are vital in minimising potential complications.

Retropubic mesh arms can exhibit considerable variability in their path. These arms may be identified anteriorly (caudally or inferiorly) to the pubic bone, traverse the obturator foramen before becoming anterior to the pubic bone, or even extend several centimetres within the rectus muscle in a cephalad direction. Mesh arms in such atypical placements are presumed to carry a higher risk of unintended complications, including chronic pain. Consequently, these variations may be overrepresented in patients seeking mesh sling removal.

The open retropubic technique circumvents entry into the peritoneal cavity and obviates the need for procedures involving pneumoperitoneum or Trendelenburg positioning. This is particularly advantageous for patients with intra-abdominal adhesions or anaesthesia-related concerns. By avoiding these additional complexities, the open approach streamlines surgical and anaesthetic considerations. With experience, the size of the retropubic incision can be minimised.

Other surgical mesh excision options for retropubic slings include a laparoscopic or robotic approach, both of which are valid options, in addition to the vaginal

incision. Heathcote et al⁷ document a combined laparoscopic and vaginal procedure for the removal of the retropubic mesh sling, however they describe the option of intentional incomplete mesh excision of the supra-fascial portions due to their concerns regarding potential injury to subcutaneous tissues or hernia formation with that technique. These approaches are intraperitoneal, with access into the mons pubis fatty tissue limited, and inherently risk incomplete mesh excision. Therefore, further suprapubic incisions over the supra-fascial portion of the mesh sling arms are required, as there are often several centimetres of mesh which may be inaccessible despite laparoscopic or robotic intraperitoneal dissection through the fascia, or when the mesh is adherent to the rectus sheath insertion to the pubic bone. All rectus fascial incisions should be closed to reduce risks of hernia formation.

With the surgical technique for total removal of transobturator midurethral mesh sling described here, incision and dissection of the inner thigh/groin to identify the mesh arms does not involve any division of muscles. Murphy et al¹¹ describe a technique which includes detaching the gracilis and adductor brevis muscles from the inferior pubic ramus. Such extensive dissections have not been required for mesh identification in our cases.

Laparoscopic and robotic approaches for excision of transobturator mesh slings have been developed,⁴ however vaginal and groin incisions are still required for most. The cost and availability of robotic surgery options limit its widespread usage.

The abdominal laparoscopic and robotic approaches include additional intraperitoneal risks and extensive pelvic floor dissection for access to transobturator mesh slings. Some of the techniques for transobturator mesh sling removal, recommend involving plastic or orthopaedic surgeons, due to gynaecologists' unfamiliarity with the anatomy of thigh/groin areas. The surgical technique described in this paper does not require the involvement of other specialties. With this technique, even abnormally placed transobturator mesh sling arms, where mesh arms are anterior to the bone (trans-labial instead of transobturator) and hence very superficial, or mesh which is piercing and attached to the periosteum, can be removed. Once experienced in the non-abdominal technique described here, groin skin incision size can be reduced, and once healed, scarring is usually minimal.

In conclusion, the open retropubic and vaginal approach has proven its effectiveness in total retropubic mesh sling excision, and inner thigh/groin incisions coupled with a vaginal approach is effective for total excision of transobturator mesh slings. The techniques' adaptability to diverse mesh arm paths, avoidance of additional risks associated with intraperitoneal procedures, and consistently high success in achieving complete removal, underscore its value in addressing mesh-related complications and patient care.

The management of stress urinary incontinence has evolved significantly with the introduction of synthetic midurethral mesh slings. However, mesh complications

have become a focal point of concern, prompting the need for effective removal techniques. This paper comprehensively documents surgical techniques for the total excision of full-length retropubic and transobturator midurethral mesh slings, focusing on open non-endoscopic approaches and providing valuable insights into surgical considerations. By emphasising meticulous dissection, advice on ways to identify mesh location, careful attention to haemostasis, and avoidance of intraperitoneal complexities, these techniques offer robust solutions for patients seeking total midurethral mesh sling removal.

FUTURE DIRECTIONS

It would be expected over time, that there will be less need for transobturator mesh sling removals, in view of changes in clinical practices and the recommendations from the Australian Commission on Safety and Quality in Health Care¹⁷ regarding the type of midurethral slings utilised for stress urinary incontinence. Increasing access and advancement in robotic surgery and techniques for mesh sling removals, will provide additional options for mesh excision. With the establishment of dedicated mesh removal services, women will have better access to a multidisciplinary team approach for the management of pelvic mesh complications.

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Nil

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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NEWS

AUSTRALIAN NEWS

The Continence Foundation of Australia has had a bustling period marked by the successful National Conference on Incontinence in May, the Great Dunny Hunt competition, World Continence Week, and the launch of our new animated video series, 'Wee Stories'.

Health Promotion

The Foundation has recently conducted extensive research and consultations with consumers and the health and fitness sectors through the new Pelvic Floor First Review Project. A survey of 900 consumers revealed that most people do not consider their pelvic floor health until a problem arises, highlighting the need for preventive education. In response, we are developing a new strategy and action plan to enhance our pelvic floor health information and resources to better serve the community.

We have also updated our community resources on bladder and bowel control and incontinence, including six chronic condition fact sheets and the launch of our new animated video series, 'Wee Stories'. These videos, co-designed with consumers, aim to help individuals recognise symptoms of urinary incontinence and find appropriate help without relying on written or spoken language. You can watch them [here](#).

The Foundation continues to work in partnership with consumers (people with lived experience of incontinence or their carers) to help us design and deliver these projects and programs to meet their needs. [Learn more](#).

Education

With the upgrade of our Learning Management System, [Continence e-Learning](#), the Foundation now has several learning pathways available to meet the needs of all health professionals. This includes targeted learning for physiotherapists, allied health professionals, GPs, nurses and more. To register and explore our professional development offerings, [click here](#).

We are also excited to announce the purchase of the Ramsay Health Nurse Continence Specialist Curriculum, which is the first step towards providing registered nurses with specialist training to become Nurse Continence Specialists. In consultation with existing Nurse Continence Specialists, the Foundation will design a delivery structure that meets the needs of an in-demand workforce via an interactive e-learning program. More updates will be available soon, as we progress what will become the Foundation's flagship program.

The Great Dunny Hunt

The 2024 Great Dunny Hunt competition ran from 29 March to 16 June 2024, calling on the general public to submit their feedback about the National Public Toilet Map (NPTM) for their chance to win a monetary prize.

Entrants were asked questions about how frequently they used the map, reasons for using the map and how the map could be improved.

This year's hunt attracted over 2495 entries - a threefold increase on entries in 2023.

Over 1435 toilets were updated, and 207 new toilets were added, which is a fantastic result for the campaign and for individuals experiencing incontinence.

The feedback survey revealed the top nominated reason for using the NPTM was 'When travelling, I need to know the nearest public toilets are' (43.15% of responses). This was followed by 'I need to find toilets quickly due to incontinence' (17.91%) with many citing conditions such as IBS, Crohn's disease, and coeliac disease as the reason they need to find a toilet quickly. Almost 99% indicated that they would recommend the NPTM to their family and friends.

The NPTM currently shows the location of more than 23,000 toilet facilities across Australia. The campaign continues to attract great interest and plays a critical role in raising awareness of incontinence within the community. Please visit www.toiletmap.gov.au for more information.

World Continence Week

This World Continence Week (17-23 June 2024), the Foundation encouraged Australians to have open and honest conversations about incontinence with friends, family and health professionals via the theme, 'Let's talk!'

This theme aligned with the findings from our 2023 consumer survey, which revealed that 46% of respondents with current or past incontinence had not discussed it with their friends or family, an increase from the previous year. Over 39% of those respondents cited embarrassment as the reason. To support World Continence Week and foster conversations, the Foundation launched a national awareness campaign featuring PR efforts on radio, and social media advertising, as well as promotions in GP clinics. This resulted in extensive coverage, including [this article](#) in The Age.

The Foundation has a number of campaign resources available for download and sharing, which can be accessed [here](#).

32nd National Conference on Incontinence

The 32nd National Conference on Incontinence was held on 22-25 May 2024 at the Brisbane Convention & Exhibition Centre. The conference welcomed over 510 delegates from Australia and across the globe, 54 exhibitors and 59 speakers over four inspiring days. Delegates had the opportunity to hear from international and local experts about the latest in incontinence research and practice, presented in a broad range of sessions and workshops.

The Foundation awarded scholarships to 14 health professionals from rural and remote areas across Australia. This enabled seven nurses and seven physiotherapists to attend the conference. The State and Territory Advisory Committee's awarded nine scholarships with six of these to health professionals working in rural or remote areas.

The 33rd National Conference on Incontinence will be held in Hobart, Tasmania, from 7-10 May, 2025. [Learn more here.](#)

National Consumer Survey

Each year, the Continence Foundation of Australia conducts a National Consumer Survey which offers insights into the community's perceptions and experiences of incontinence, examination of quality of life matters and the well-being of those affected and their carers. Approximately 2000 people participated in this year's survey, representing a broad cross-section of the Australian population by age, gender, and geography. We included additional questions about the type of incontinence (bladder, bowel, or both) and the number of times a woman has given birth, including multiple births. This year marks five consecutive years of conducting national consumer surveys, allowing us to use the cumulative five-year data for trend analysis.

Gian Sberna

CEO, Continence Foundation of Australia

NEW ZEALAND NEWS

As we approach the end of 2024 we are in the final stages of several significant projects and planning for the coming year.

CEO Laura Fear moved on to a new role in January, and we have had the acting CEO role in place to allow the organisation time to complete several important projects before commencing recruitment. As these projects are coming to a close, we plan to begin the recruitment process in early 2025.

I would like to thank our small team for their ongoing commitment and dedication during this interim period. Despite having less human resources and an increased workload they have continued to successfully deliver key outcomes and we are very grateful for all that they do for the organisation.

One of the projects nearing completion is our website redesign, which has been a comprehensive undertaking. We have focused on enhancing the user experience and look forward to sharing the finished site with our members and the public in the near future.

Another significant project has been the community review of our pregnancy guide. We released a comprehensive pregnancy guide in late 2023, which has been very well received. We have reviewed feedback from key stakeholders and are making final adjustments with the aim of releasing an updated guide in 2025. The guide has been endorsed by the Aotearoa New Zealand branch of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists, and we are very grateful for their support as we progress this important work.

World Continence Week

Our World Continence Week campaign in June once again featured beloved New Zealand entertainer Jason Gunn. The campaign focused on encouraging New Zealanders to look after their pelvic health, through signing up for our Pelvic Floor Challenge. Participants received daily motivation and tips, and our comprehensive pelvic floor guide was shared widely.

Jason's engaging and inspiring campaign video reached over 71,000 people, and we are very grateful for his ongoing involvement with our work.

We would like to thank our members for their ongoing support, we truly appreciate the effort that went into promoting and sharing the campaign to raise awareness, reduce the stigma, and encourage help seeking. The campaign had over 650 online shares and comments, and 534 people signed up for the challenge. Many of these were people supporting a larger group, and we also appreciate the time taken by those who shared their feedback about the campaign. We were delighted with the positive response and look forward to our 2025 campaign. You can find the full details of the campaign on our website.

Education

With funding from the IHC Foundation we have

developed a webinar series to support disabled students, their teachers and support staff, parents, carers, and whānau (family) around New Zealand.

The webinars have been released weekly and are also available on demand on the education page of our website. We are very fortunate to have the expertise of our wonderful former colleague, Continence Nurse Lisa Smith from the Children's Continence Service, who ran these webinars on our behalf.

This webinar series joins a range of other courses and webinars on our website. We encourage members and non-members to access these via the education page, at no cost.

Health Promotion and Resources

We have recently completed an education programme with three special schools for disabled students in New Zealand, supporting a total of 675 disabled students and their whānau. Lisa Smith also led this project for us, and the project was overwhelmingly well received. We have been inundated with requests for support from other special schools, who will be well supported by our latest webinar series with Lisa.

Our team has been working to promote our education and support to organisations and community groups around the country, which has resulted in significant uptake of our online courses and webinars. We are thankful for the positive feedback we continue to receive, which assists as we work towards the development of new resources.

The help and support section of our website now has several guides available, including a guide for carers, tamariki (children) and teens, and a bowel health guide.

Strategic Planning

It is an increasingly difficult period for our health sector, with immense challenges, and our Executive Committee are reviewing our strategic plan in September to ensure that we are well placed to continue to serve our members and the New Zealand public through these difficult times. Our education offerings remain important, along with our ongoing health promotion and advocacy.

Louise Judd

Acting CEO, Continence NZ