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Chronic pain of infectious origin after urethral sling surgery : A scoping review protocol

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ADMINISTRATIVE INFORMATION

Support - N/A.

Review Stage at time of this submission - Formal screening of search results against eligibility criteria.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 1 July 2025 and was last updated on 1 July 2025.

INTRODUCTION

Review question / Objective This scoping review aims to map and characterize infectious etiologies associated with chronic pain in individuals who have undergone sling procedures for urinary incontinence.

Background Stress urinary incontinence (SUI) is a prevalent yet debilitating condition that significantly impacts quality of life. First-line treatments typically include lifestyle modifications, pelvic floor muscle training, and the use of continence pessaries or vaginal inserts (EAU Guidelines, 2025; Kobashi et al., 2023; Linda Cardozo et al., 2023). However, despite these conservative approaches, many patients continue to experience leakage, often necessitating more invasive interventions such as sub-urethral sling implantation (EAU Guidelines, 2025; Kobashi et al., 2023; Linda Cardozo et al., 2023).

Sub-urethral slings fall into two main categories: midurethral and pubovaginal. Midurethral slings are positioned without tension around the mid-urethra to stabilize the posterior urethral wall and prevent excessive movement during episodes of increased intra-abdominal pressure—the primary mechanism underlying SUI-related leakage. In contrast, pubovaginal slings enhance urethral coaptation and improve urethral responsiveness to abdominal pressure. While these procedures are highly effective in alleviating SUI symptoms (EAU Guidelines, 2025; Kobashi et al., 2023; Linda Cardozo et al., 2023), they are not without complications, with an estimated 10% of patients experiencing adverse effects (Toozs-Hobson et al., 2019). Among these, perineal pain has been reported to account for about 7 to 15% of complications (Rigaud et al., 2010; Toozs-Hobson et al., 2019; Welk & Herschorn, 2010). Another critical consideration is that pain is a primary reason for sling explantation. However, once the sling is removed, some patients continue to experience pain, and recurrent SUI occurs in most cases, leaving them with few viable options for managing their urinary symptoms (Syan et al., 2019). This highlights the urgent need to better

understand and mitigate sling-related pain to improve long-term patient outcomes.

Rationale Numerous studies have explored the causes and clinical presentations of sling-related pain (Clavé et al., 2010; Søgaard & Glavind, 2021; Toozs-Hobson et al., 2019). Proposed mechanisms include sling extrusion, postoperative hematoma formation, direct surgical trauma, nerve irritation due to the tape's proximity to neural structures or local tissue tethering, and idiosyncratic reactions—particularly in patients with pre-existing pain syndromes such as fibromyalgia (Clavé et al., 2010; Søgaard & Glavind, 2021; Toozs-Hobson et al., 2019).

However, delayed-onset pain after sling placement represents a particularly understudied presentation—and consequently, remains misunderstood. These patients frequently present with nonspecific symptoms and no clear anatomical abnormalities, making diagnosis particularly challenging (Toozs-Hobson et al., 2019). Currently, data on these later-onset presentations remain scarce, and the potential role of sling colonization in chronic pain development remains largely unexplored. This review may provide some of the first synthesized evidence suggesting that infection could be a contributing factor in chronic sling-related pain. Furthermore, a potential infectious contribution to sling-related pain could warrant targeted strategies to improve patient outcomes.

METHODS

Strategy of data synthesis A preliminary iterative search process was conducted across all selected sources to test combinations of keywords, controlled vocabulary terms, Boolean operators, and database-specific functionalities. This pilot phase informed the development and refinement of the final search strategy, ensuring optimal sensitivity and specificity. The process was conducted in collaboration with a health sciences librarian, who assisted in validating and refining the search strategy.

The electronic databases to be searched from inception for this review include PubMed, Embase, and CINAHL. Both keywords and controlled vocabulary will be used: keywords will be searched in the title and abstract fields, while Medical Subject Headings (MeSH) in PubMed, Emtree terms in Embase and CINAHL Headings in CINAHL will optimize search performance. In Embase, author-supplied keywords will also be included, as this database indexes them systematically and they often capture terminology that does not yet appear in the title or abstract. Across all databases, keywords were developed around three core concepts relevant to the review question: the symptom (chronic pain), the potential etiology (sling infection), and the targeted medical condition (stress urinary incontinence).

Boolean logic will be applied consistently across databases: keywords and subject headings related to each concept will be combined using the OR operator, while the three core concepts will be combined using the AND operator. Proximity operators will be used in Embase and CINAHL to improve retrieval of records where key terms—such as those referring to chronic pain or sling-related infection—appear near each other but not necessarily in exact phrases.

Grey literature will also be searched from leading scientific societies, including the International Continence Society (ICS) and ProQuest Dissertations & Theses Global. In addition, snowballing techniques will be used to identify further relevant studies. Although review articles will not be included in the data synthesis, potentially relevant ones identified during screening will be set aside for reference list screening, along with the references cited in included primary studies. Any additional primary studies identified through this process will be explicitly reported to ensure transparency and avoid duplication.

Eligibility criteria This scoping review will include primary research studies of any design and from any publication date. Review articles will be excluded. Participants must be of any sex or age and have undergone a sling procedure specifically for the treatment of SUI. Only studies published in English or French will be considered. No restrictions will be applied regarding clinical setting (e.g., hospital, outpatient, community care), geographic location, or level of care.

To be eligible, the reported pain must be chronic (lasting more than 3 months), regardless of its pattern or onset. The pain must be likely linked to sling contamination and located in the abdomen, pelvis, low back, buttock, vagina, or upper region of the lower limb (e.g., groin, proximal thigh). Infection must be confirmed by validated diagnostic methods such as microbiological culture, imaging, or histological analysis.

Studies in which infection is only suspected clinically, without diagnostic confirmation, will be excluded. The review will also exclude cases where the sling procedure was performed for

reasons other than SUI (e.g., pelvic organ prolapse), or where the pain is acute, subacute, or located outside the specified anatomical regions.

This inclusive approach aims to capture all relevant evidence, regardless of methodological quality or quantity of relevant information, to map the infectious etiologies of chronic pain following sling surgery for SUI, across all clinical settings and geographic regions.

Source of evidence screening and selection All search results from the selected electronic databases will be exported into Covidence, where duplicates will be automatically identified and removed. Prior to the formal screening, a pilot test of the screening process will be conducted by the review team using a sample of records (about 10 to 20) to ensure consistent interpretation and application of the inclusion and exclusion criteria. Discrepancies identified during the pilot will be discussed and the eligibility criteria refined if needed.

Two independent reviewers will conduct the primary screening in three sequential phases: (1) title screening, (2) abstract screening, and (3) full-text review. At each phase, articles will be assessed for eligibility based on the predefined inclusion and exclusion criteria. Reasons for exclusion will be recorded during the full-text screening stage. Additional sources identified through grey literature searches and snowballing techniques will be screened following the completion of the primary database screening.

After screening, the reviewers' decisions will be compared. Any discrepancies will be resolved through discussion. If consensus cannot be reached, a third reviewer will adjudicate. This process ensures methodological transparency and minimizes selection bias.

For data extraction, two independent reviewers will extract relevant information using a standardized data extraction form. The form will be pilot tested as part of the preliminary screening exercise designed to ensure consistent application of eligibility criteria, with the goal of assessing the clarity, consistency, and appropriateness of its fields. Revisions will be made as needed. A third reviewer will act as a verifier to resolve any inconsistencies or errors in the extracted data.

Data management Search results from all databases will be imported into Covidence for deduplication and management of the screening process. Covidence will facilitate article tracking, blind independent screening by two reviewers, and resolution of conflicts.

Once the full-text screening is complete and final included studies are confirmed, data will be extracted using a custom data extraction sheet developed specifically for this review. This sheet will consolidate all relevant variables and will be stored in a secure institutional drive accessible only to the research team. The sheet will include structured fields for study characteristics, population details, type of sling, infection-related findings, diagnostic methods, pain descriptors, and time course.

Key study characteristics will be summarized in tabular format, including publication year, study design, sample size, population demographics, and type of sling. A separate summary table will categorize the identified pathogens, the diagnostic method used (e.g., culture, imaging, histology), and the characteristics of the reported pain (e.g., location, intensity, chronicity).

Reporting results / Analysis of the evidence The study selection process will be documented using a PRISMA-ScR flow diagram, summarizing the number of records identified, screened, assessed for eligibility, and included, along with reasons for exclusions at the full-text stage.

Key study characteristics will be summarized in tabular format. Additional synthesis will highlight patterns in infectious agents, diagnostic approaches, temporal relationships, participants biological sex, type of sling surgery, and anatomical pain locations. No formal risk of bias assessment will be performed, consistent with scoping review methodology.

A full narrative synthesis will accompany all tables and figures to highlight recurring patterns, knowledge gaps, and areas of heterogeneity across the included studies.

Presentation of the results Results will most likely be presented through a combination of narrative description, summary tables, and visual figures to map the evidence on infectious etiologies associated with chronic pain following sling procedures for stress urinary incontinence.

A PRISMA-ScR flow diagram will illustrate the study selection process, from initial search to final inclusion, along with reasons for full-text exclusions.

Language restriction The search will be limited to literature published in English or French.The search will be restricted to English or French literature.

Country(ies) involved This review is being carried out in Québec, Canada. There will be no geographic restrictions applied to the search.

Other relevant information The proposed scoping review will be conducted in accordance with the Joanna Briggs Institute (JBI) methodology for scoping reviews and Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) guidelines.

Keywords Chronic pain; mid-urethral sling; sling complication; sling infection; sling-related pain; stress urinary incontinence; sub-urethral sling; SUI; urinary incontinence.

Dissemination plans Findings from this review will be submitted to a peer-reviewed journal in the fields of urogynecology, chronic pelvic pain, or surgical outcomes. The research team intends to share the results at relevant national and international conferences, and to disseminate them within the research institution and clinical networks.

Contributions of each author

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