



REVIEW ARTICLE

Minilaparoscopy in urology: Systematic review[☆]



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KEYWORDS

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Abstract

Context: There has been a boom in recent years in urological procedures using minilaparoscopy (ML).

Objective: To conduct a systematic review of the published evidence on ML and its current role in urology.

Acquisition of evidence: We performed a search on MedLine spanning October 1983 to December 2016 according to PRISMA criteria. A total of 6 comparative articles and 13 series were selected for this manuscript.

Summary of the evidence: Only 1 study was randomized, 4 studies were prospective and comparative, and most were case series in which the operations were performed with 3-mm instruments. The most common procedures were adrenalectomy, followed by nephrectomy, living donor and pyeloplasty. Other minor conditions were also operated on, including cyst decortications, pyelolithotomies, lymphadenectomies, varicocelectomies and orchiectomies.

Discussion: There have been significant technical improvements in recent years in the materials of ML. Most procedures were for reconstructive surgery and by transperitoneal approach, with a gradually increasing number of cases of oncologic surgery. Only 36.8% of the series assessed the cosmetic results with validated questionnaires, and 68.4% of the studies used the visual analog scale to measure pain during the postoperative period.

Conclusions: The level of evidence of most published studies is low. ML is a reproducible technique for urological surgery and is safe even for operations on large surgical masses. The procedure's cosmetic and pain results after surgery are superior to those of conventional laparoscopy, although these conclusions should be taken with caution given the limitations of the current studies.

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PALABRAS CLAVE

Minilaparoscopia;
Revisión;
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Minilaparoscopia en urología: revisión sistemática**Resumen**

Contexto: En los últimos años las intervenciones urológicas por minilaparoscopia (ML) han experimentado un auge.

Objetivo: Realizar una revisión sistemática de la evidencia publicada sobre la ML y su papel actual en la urología.

Adquisición de evidencia: Se realizó una búsqueda en *Medline* desde octubre 1983 hasta diciembre de 2016 siguiendo los criterios PRISMA. Un total de 6 artículos comparativos y 13 series fueron seleccionadas para este manuscrito.

Síntesis de evidencia: Tan solo un estudio fue aleatorizado, 4 estudios fueron prospectivos y comparativos y la mayor parte fueron series de casos intervenidos con instrumental de 3 mm. La intervención más frecuente fue la adrenalectomía, seguida de la nefrectomía, donante vivo y pieloplastia. Además se operaron otras enfermedades menores como decorticaciones quísticas, pielolitomías, linfadenectomías, varicocelelectomías u orquiectomías.

Discusión: En los últimos años ha habido importantes mejoras técnicas en el material de ML. La mayoría de los procedimientos fueron de cirugía reconstructiva y por abordaje transperitoneal, incrementándose paulatinamente el número de casos de cirugía oncológica. Solo un 36,8% de las series evaluaron los resultados cosméticos con cuestionarios validados y un 68,4% de los estudios emplearon la escala visual analógica para medir el dolor postoperatorio.

Conclusiones: El nivel de evidencia de la mayoría de los estudios publicados es bajo. La ML es una técnica reproducible para la cirugía urológica y segura incluso para las intervenciones de grandes masas quirúrgicas. Sus resultados cosméticos y de dolor postoperatorio son superiores a los de la laparoscopia convencional, si bien estas conclusiones deben ser tomadas con cautela dadas las limitaciones de los estudios actuales.

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Context

In 1998, Soble et al. published the first experience in adrenalectomies with minilaparoscopy instruments (ML).¹ Subsequently, Gill et al. used this technique in other indications.² Until recently, this material was restricted to be used as accessory armamentarium in conventional laparoscopy for pediatric ages. The forceps were too flexible, did not transmit the necessary traction during the surgeries, and the lenses presented a limited image quality, which made it an unreliable material for laparoscopic surgery in adults. For this reason, ML was considered an experimental technique, recommended only for laparoscopic experts that did not offer significant advantages over the classical, laparoscopic, or open technique.^{3,4}

With the development of the single-site surgical approaches (LESS) and through natural orifices (NOTES) and the definition of scarless surgery,⁵ a renewed interest of the surgical community has been generated in ML. This interest has been driven by the appearance of a new generation of ML laparoscopic instruments (Karl Storz), whose development has made it possible to overcome the initial limitations to high levels of reliability. This fact, together with the peculiarity of being based on the same principles of triangulation of classical laparoscopy, provides ML with the elements to be a technique prepared to be incorporated into the usual laparoscopic practice.^{6,7}

ML is considered the use of instruments and lenses of up to 3 mm,^{3,8} being able to be combined with larger trocars

in hybrid approaches.⁹ ML aims to reduce the injury of the abdominal wall with respect to the standard laparoscopic access, which would result in a better esthetic result, less pain, and an early recovery.¹⁰ In urology, the evidence supporting the ML approach is limited to small series or to discrete comparative studies of centers with extensive laparoscopic experience. More robust analyses of larger series are needed to corroborate the findings observed in these initial experiences. Below we describe the main ML publications in the different urological procedures in adults.

Evidence acquisition**Gathering the evidence**

A search and peer review was carried out in *Medline* of articles published in the bibliography from October 1983 to December 2016. The search terms for ML were: *mini laparoscopy urology, mini-laparoscopic urology, mini-laparoscopy and urology, needlescopic surgery urology, minilaparoscopic and urology and 3-mm instruments and urology.*

Two independent authors carried out a screening of the titles and abstracts of each citation. Reviews, editorials, comments, and letters to the editor were not included. Articles referring to other approaches, educational or other not related to the subject of study, were also excluded. In addition, articles were selected from the related references. Articles with less than 5 cases and patients of pediatric age

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