

SINGLE PORT UMBILICAL HERNIA REPAIR: A CASE SERIES ANALYSIS OF TECHNIQUE, OUTCOMES, AND COMPLICATIONS

Selvin Durai R¹, B. Sathyapriya², A. Anandhi²

¹Post Graduate, Department of General Surgery, Government Stanley Medical College, India.

²Professor and Chief, Department of General Surgery, Government Stanley Medical College, India.

Received : 05/09/2024
Received in revised form : 25/10/2024
Accepted : 09/11/2024

Keywords:

Umbilical hernia, single port laparoscopic repair, hernia recurrence, cosmetic outcome, day-care surgery.

Corresponding Author:

Dr. B. Sathyapriya,
Email: drbspriya@yahoo.co.in

DOI: 10.47009/jamp.2024.6.6.47

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2024; 6 (6); 238-240



Abstract

Background: Umbilical hernias are common abdominal wall defects that may require surgical intervention to prevent complications. This retrospective case series investigates single port laparoscopic repair for small umbilical hernias (<2 cm) without mesh, focusing on efficacy, safety, and aesthetic outcomes. The objective is to evaluate the safety and effectiveness of single port laparoscopic umbilical hernia repair in adult patients. **Materials and Methods:** A total of 20 adult patients (80% female, mean age 31-40) with small umbilical hernias underwent single port laparoscopic repair. Procedures were performed under general anesthesia with a suture-based approach due to mesh limitations. Patients were followed for one year to assess postoperative complications, recurrence, and cosmetic satisfaction. **Result:** The average hernia defect was 1.5 cm. No recurrences, seroma formation, or infections were noted postoperatively. All patients expressed high satisfaction with the aesthetic outcome, particularly with the neo-umbilicus. **Conclusion:** Single port laparoscopic umbilical hernia repair is a safe, effective, and minimally invasive option for small umbilical hernias, suitable for day-care surgery with favorable clinical and cosmetic outcomes.

INTRODUCTION

Umbilical hernias represent a common type of ventral hernia, accounting for approximately 6-14% of all abdominal wall hernias.^[1] They often occur in adults due to increased intra-abdominal pressure from obesity, chronic cough, or liver disease with ascites. Small umbilical hernias (≤ 2 cm) may remain asymptomatic but carry risks for complications like incarceration and strangulation.^[2]

The choice of surgical technique depends on hernia size and patient factors. While mesh repair reduces recurrence, it may not be necessary for smaller hernias, where tension-free suture techniques can be effective.^[3] Single port laparoscopic hernia repair offers an aesthetically favorable option with fewer incisions, minimized scarring, and quicker recovery compared to multiport approaches.^[4]

Previous studies support laparoscopic approaches for reduced post-op pain and faster recovery. However, outcomes specific to single port, suture-only methods, especially for small defects, are less frequently reported. This case series contributes to existing knowledge by evaluating single port outcomes for small hernia defects, particularly focusing on recurrence and cosmetic results.

Case Selection: Selection criteria for this case series were strictly defined to include only patients meeting the following conditions:

Inclusion Criteria

- Adults (18-65 years) with hernia defects <2 cm.
- No prior hernia repairs or contraindications for suture-only methods.
- Contraindications for mesh use due to infection risk or limited availability.

2. Exclusion Criteria:

- o Defects >2 cm or complex hernias.
- o Comorbidities indicating a need for mesh-based repair.

A total of 20 patients were identified between August 2023 and July 2024, meeting the criteria and included in the study [5].

MATERIALS AND METHODS

A retrospective observational approach was adopted, focusing on the single port laparoscopic repair using minimal instrumentation.

Table 1: Instruments Used in Single Port Umbilical Hernia Repair: Key Tools and Their Purposes

Instrument	Purpose
10mm Laparoscope	Visualization of the hernia site
Tuohy Needle	Suture threading through the abdominal wall
Port Closure Needle	Precise suture retrieval
Prolene "1" Suture	Primary suture material for defect closure

Surgical Procedure:

- **Anesthesia and Positioning:** Patients were placed supine under general anesthesia.
- **Port Placement:** A single 10mm laparoscope port was introduced at Palmer’s point, and CO₂ pneumoperitoneum was established.
- **Defect Visualization and Suturing:** After defect identification, the Tuohy needle was inserted at 11 o'clock positions around the defect.

After needle is intraperitoneal, 1 prolene is inserted through th needle.

Port closure needle is inserted at corresponding 1 o clock position and prolene is brought out.

Needle is then transfascially brought out through the opposite side (point just medial to the port closure site).

The prolene is rail roaded into the tip of the needle and brought out through the hub. (Like a Seldinger technique).

Now both loops of the material is on the same side.

Similar steps followed at 3-9o clock and 7-5 o’clock position.

Prolene is knotted and secured permanently closing the defect.^[6]

- **Closure:** Sutures were approximated and secured, with layered suturing at the port site to ensure tight defect closure.



Follow-Up Protocol: Patients were followed for a year post-operatively to monitor for recurrence, seroma, or infections.

RESULTS

This section provides an analysis of demographics, procedural outcomes, and follow-up results.

Operative Outcomes: The single port technique allowed day-care discharge in most cases without immediate postoperative complications.

Postoperative Follow-Up: All patients were followed up for a year, and no recurrences or complications, such as seromas or infections, were reported. Patients expressed satisfaction with the cosmetic appearance, particularly noting the natural appearance of the neo-umbilicus.



Table 2: Patient Demographics: Age, Gender, and Hernia Defect Size Distribution.

Characteristic	Count (n=20)	Percentage / Range
Female	16	80%
Male	4	20%
Mean Age	-	31-40 years
Average Hernia Defect Size	-	1.5 cm

Table 3. Operative Outcomes: Complication Rates and Patient Satisfaction

Outcome	Count (n=20)	Percentage
Immediate Postoperative Complications	0	0%

Recurrence	0	0%
Seroma Formation	0	0%
Aesthetic Satisfaction	20	100%

Table 4. Postoperative Follow-Up Findings: Complication and Satisfaction Metrics

Complication	Count (n=20)	Recurrence Rate
Infection	0	0%
Seroma Formation	0	0%
Recurrence	0	0%
Cosmetic Satisfaction	20	100%

DISCUSSION

The discussion contrasts single port laparoscopic repair outcomes with other methods, particularly focusing on factors like complication rates, recovery, and recurrence.

Comparison with Other Techniques:

- Conventional open repair has a higher risk of infection and scarring, especially in procedures without mesh.^[7]
- Multiport laparoscopic repair, while effective, involves more incisions, contributing to longer recovery and potential for visible scarring.^[8]

Advantages of Single Port Laparoscopy:

- **Cosmetic Benefits:** The single incision leaves minimal scarring, which is particularly appreciated by patients concerned about visible scarring near the umbilicus.^[9]
- **Efficiency:** Minimal instrumentation reduces operative time, making this approach suitable for day-care surgery with quicker recovery.^[10]
- **Low Complication Rates:** The single port approach demonstrated zero recurrences or seroma formations in this series, contrasting with higher complication rates reported for open repairs.^[11]

Limitations:

- **Scope of Application:** The technique is applicable only to smaller hernias, limiting its use in cases where hernia size exceeds 2 cm.
- **Mesh Limitations:** Lack of composite mesh availability can limit the repair options in certain settings.^[12]

Implications for Practice:

- **Suitability for Day-Care Surgery:** With low recurrence and complication rates, single port repair is a feasible option for outpatient settings.
- **Patient Satisfaction:** High satisfaction with aesthetic results underlines the importance of cosmetically favorable techniques, especially in elective hernia repairs.^[13]

CONCLUSION

This case series demonstrates that single port laparoscopic umbilical hernia repair is an effective and safe method for small hernia defects, achieving

excellent clinical and cosmetic outcomes with minimal risk of recurrence or complications. The single incision approach provides substantial advantages in patient satisfaction and reduced recovery times, making it a viable option for day-care surgery. Future studies may focus on larger patient populations or explore outcomes in patients with hernia sizes nearing the upper limit of 2 cm to further validate these findings.

REFERENCES

1. Shankar DA, Itani KMF, O'Brien WJ, Sanchez VM. Factors Associated With Long-term Outcomes of Umbilical Hernia Repair. *JAMA Surg.* 2017 May 01;152(5):461-466. [PMC free article] [PubMed]
2. Venclauskas L, Jokubauskas M, Zilinskas J, Zviniene K, Kiudelis M. Long-term follow-up results of umbilical hernia repair. *Wideochir Inne Tech Maloinwazyjne.* 2017 Dec;12(4):350-356. [PMC free article] [PubMed]
3. Dabbas N, Adams K, Pearson K, Royle G. Frequency of abdominal wall hernias: is classical teaching out of date? *JRSM Short Rep.* 2011 Jan 19;2(1):5. [PMC free article] [PubMed]
4. Henriksen NA, Montgomery A, Kaufmann R, Berrevoet F, East B, Fischer J, Hope W, Klassen D, Lorenz R, Renard Y, Garcia Urena MA, Simons MP., European and Americas Hernia Societies (EHS and AHS). Guidelines for treatment of umbilical and epigastric hernias from the European Hernia Society and Americas Hernia Society. *Br J Surg.* 2020 Feb;107(3):171-190. [PubMed]
5. Troullioud Lucas AG, Jaafar S, Panda SK, Mendez MD. StatPearls [Internet]. StatPearls Publishing; Treasure Island (FL): Nov 18, 2023. Pediatric Umbilical Hernia. [PubMed]
6. Kulaçoğlu H. Current options in umbilical hernia repair in adult patients. *Ulus Cerrahi Derg.* 2015;31(3):157-61. [PMC free article] [PubMed]
7. Forrest JV, Stanley RJ. Transverse colon in adult umbilical hernia. *AJR Am J Roentgenol.* 1978 Jan;130(1):57-9. [PubMed]
8. Celdrán A, Bazire P, Garcia-Ureña MA, Marijuán JL. H-hernioplasty: a tension-free repair for umbilical hernia. *Br J Surg.* 1995 Mar;82(3):371-2. [PubMed]
9. Fathi AH, Soltanian H, Saber AA. Surgical anatomy and morphologic variations of umbilical structures. *Am Surg.* 2012 May;78(5):540-4. [PubMed]
10. Henriksen NA. Systemic and local collagen turnover in hernia patients. *Dan Med J.* 2016 Jul;63(7) [PubMed]
11. Kelly KB, Ponsky TA. Pediatric abdominal wall defects. *Surg Clin North Am.* 2013 Oct;93(5):1255-67. [PubMed]
12. Oma E, Jorgensen LN, Meisner S, Henriksen NA. Colonic diverticulosis is associated with abdominal wall hernia. *Hernia.* 2017 Aug;21(4):525-529. [PubMed]
13. Belghiti J, Durand F. Abdominal wall hernias in the setting of cirrhosis. *Semin Liver Dis.* 1997;17(3):219-26. [PubMed]