



SINGLE INCISION LAPAROSCOPIC APPENDICECTOMY COMPARED WITH CONVENTIONAL LAPAROSCOPIC APPENDICECTOMY

Surgery

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ABSTRACT

Introduction: This study is to know if Single port appendectomy would offer similar operative time, length of stay, and complication profile with improved cosmesis and less postoperative pain in comparison to conventional multi-incision laparoscopic appendectomy or also called standard laparoscopic appendectomy (LA).

Methods and Materials: In total 50 cases of laparoscopic appendectomy, 25 cases of single incision laparoscopic appendectomy and 25 cases of conventional laparoscopic appendectomy was done. Primary endpoints are operative time, complication rate, postoperative pain, recovery time and long-term cosmetic outcome.

Results: Operative time in conventional laparoscopic appendectomy is 53 minutes and in single incision laparoscopic appendectomy is 74.4 minutes. Post operative hospital stay in conventional laparoscopic appendectomy is 1.72 days and in single incision laparoscopic appendectomy is 1.24 days. Time taken to return to daily routine work in conventional laparoscopic appendectomy is 6.24 days and in single incision laparoscopic appendectomy is 5.72 days. Conversion rate to open appendectomy in conventional laparoscopic appendectomy is 4% and in single incision laparoscopic appendectomy is 12%. Post operative pain in conventional laparoscopic appendectomy according to visual analogue score in average is 6.84 and in single incision laparoscopic appendectomy is 5.16.

Conclusions: Single incision laparoscopic appendectomy is good in post operative pain, cosmetic outcome, post operative hospital stay and return to daily routine activities than conventional laparoscopic. But complication rate is more in single incision procedures because incision length is more in this procedure. Operative time and conversion rate is more in single incision procedures due to long learning curve.

KEYWORDS

INTRODUCTION

Nowadays, minimally invasive surgery has increased in its use. A new era has been opened with recent innovations that have pioneered the use of single incision laparoscopic surgery (SILS) or Single Port Access (SPA). This novel technique or approach may be placed between the pure NOTES surgery, the hybrid NOTES surgery, and the standard laparoscopic surgery. Appendectomy is the most common abdominal emergency operation performed in the world. Some reasons have made that more and more appendectomies are currently performed laparoscopically such as advantages to patients in terms of more accurate diagnosis, diminished wound infections, possibility to treat obese patients, and a more rapid recovery.

First report of single-puncture laparoscopic appendectomy technique was performed in 1992 and showed the new approach as a safe, inexpensive, and effective alternative to the currently used multiple-puncture method. The new trans umbilical approach seems to reduce the trauma of surgical access with its improvement of the postoperative pain and patient cosmesis compared to standard laparoscopic approach. However, other important issues must be critically analyzed such as time consumed, complications and difficulties to perform this novel technique. This new technique has been introduced to the surgical community and we have concentrated on knowing about the feasibility, safety, and clinical advantage of the method. For these reasons, in order to implement SPA Appendectomy (SPAA), and know its difficulties, limitations, or advantages, we conducted this study.

METHODS AND MATERIALS

Recent advances in laparoscopic instrumentation have made it possible to perform intra-abdominal operations entirely through a small incision that can be hidden within the umbilicus.

The goal is to perform surgery with fewer incisions and no visible scars. Other potential benefits are faster recovery, less pain, and fewer wound complications. The term SILS (Single Incision Laparoscopic Surgery) is being used to describe such techniques, and many have touted SILS as a major breakthrough in minimally-invasive surgery, moving the field closer to surgery that is bloodless, incisionless and painless. Despite the hype, prospective comparisons of SILS versus conventional laparoscopy are lacking. Results of SILS procedures have generally been limited to case reports and small case series that lack controls. Primary endpoints are operative time, complication rate, postoperative pain, recovery time and long-term cosmetic outcome.

INCLUSION CRITERIA:

1. Suspected acute appendicitis on clinical and radiographic (USG) grounds

EXCLUSION CRITERIA:

1. Phlegmon
2. Mass
3. Peri-appendiceal abscess
4. Diffuse peritonitis
5. Prior open laparotomy with incision through the umbilicus
6. Age less than 18 years
7. Mental illness, dementia, or inability to provide informed consent.
8. Chronic pain requiring daily medication (including opiate and NSAIDS)
9. Pregnancy

This study consists of total 50 cases of laparoscopic appendectomy, in it 25 of single incision laparoscopic appendectomy and 25 of conventional laparoscopic appendectomy in Civil Hospital, Ahmedabad.

RESULTS:

In total 50 cases of laparoscopic appendectomy, 25 cases of single incision laparoscopic appendectomy and 25 cases of conventional laparoscopic appendectomy was done.

1) Operative time:

In this study, average operative time of conventional laparoscopic appendectomy is 53 minutes, and single incision laparoscopic appendectomy is 74.4 minutes.

2) Post operative hospital stay:

In this study, average post-operative stay in hospital in days in conventional appendectomy is 1.72 days and single incision laparoscopic appendectomy is 1.24 days.

3) Time taken to return daily routine work:

Patients require time to return to daily routine activities in conventional appendectomy is 6.24 days and in single incision laparoscopic appendectomy is 5.72 days.

4) Conversion rate

Conversion rate is 12% in SILS appendectomy and 4% in conventional appendectomy.

5) Post operative pain

According to visual analogue score in average

Type of procedure	Post op.	After 6 hours	After 12 hours	After 24 hours	After 48 hours
Conventional Laparoscopic appendectomy	6.84	4.4	3.12	2.12	0.6
Single incision laparoscopic appendectomy	5.16	2.84	2	1.32	0.44

DISCUSSION:

This study consists of total 50 cases of laparoscopic appendectomy, in it 25 of single incision laparoscopic appendectomy and 25 of conventional laparoscopic appendectomy in Civil Hospital, Ahmedabad.

1) Operative time

In this study, average operative time of conventional laparoscopic appendectomy is 53 minutes, and single incision laparoscopic appendectomy is 74.4 minutes. It denotes that time in conventional procedure is less than newer single incision procedure. So newer procedures need much practice for it.

2) post operative hospital stay

In this study, average post-operative stay in hospital in days in conventional appendectomy is 1.72 days and single incision laparoscopic appendectomy is 1.24 days. Post operative hospital stay is slightly more in conventional laparoscopic appendectomy than single incision laparoscopic appendectomy.

3) Time taken to return daily routine work

Patients require time to return to daily routine activities in conventional appendectomy is 6.24 days and in single incision laparoscopic appendectomy is 5.72 days. So, it suggests that patient operated by newer single incision laparoscopic appendectomy is superior than conventional because it takes less time to return to daily routine activities.

4) Conversion rate

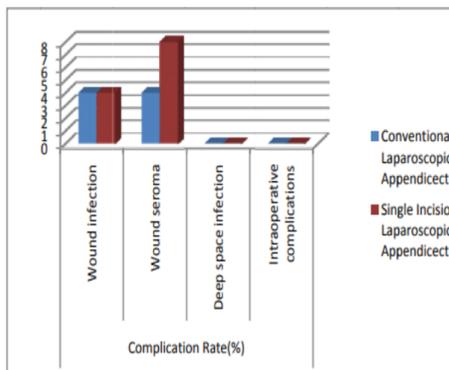
Conversions from conventional laparoscopic appendectomy to open appendectomy is due to severe adhesions, and conversion of single incision laparoscopic procedure to other laparoscopic or open procedure is due to technical difficulties and severe adhesions. Conversion rate is 12% in SILS appendectomy and 4% in conventional appendectomy. So this finding suggests that learning of newer procedure needs practice and familiarity of newer instruments. This finding also shows that instruments used in multichannel port are curved and difficult to use; so, chances of conversion to conventional one is more in this single port technique.

5) Post operative pain

According to visual analogue score in average

Patients with single incision laparoscopic appendectomy experience less postoperative pain and showed early return to their routine activities than conventional laparoscopic appendectomy.

This study includes immediate complications like wound infection, wound seroma formation etc. the umbilical incision length of single incision procedure is more than that of conventional procedure. So wound complications are more in single incision procedure than conventional one.



Summary

In this study, comparison of operative time between conventional laparoscopic appendectomy with single incision laparoscopic appendectomy showed that there was less time require in conventional procedure than single incision procedure. If we practice more single incision procedure, than less time will be required to complete it. The term 'learning curve' is often used to describe the phenomenon of acquiring the surgical skills to perform a specific operation safely, sufficiently and effectively. This learning curve was long with this single incision procedure because techniques and instruments were more cumbersome than conventional one. Patients with single incision laparoscopic appendectomy experience less postoperative pain and showed early return to their routine activities than conventional laparoscopic appendectomy. Conversion rate was high in single incision procedures because techniques and instruments are more difficult to use. Using newer single incision port with its different curved instruments made this procedure more difficult than other procedure with single incision 2 port. Early post operative pain was less with single incision procedures than conventional procedures. And at the end of 2 day, pain score was almost equal in both procedures. Cosmetically 21 patients out of 25 were satisfied by getting incisionless, scar less; single incision laparoscopic appendectomy. Wound infection and wound seroma were included as early complications. Wound infection was found equal in both procedures. Wound seroma was more in single incision procedures, specifically in single incision multichannel port because the size of incision was large. No intra operative complication was seen in study. Limitations in single incision laparoscopic appendectomy 1) Initial cost to setup single incision multichannel port laparoscopic set was too much large. And also using new single incision multichannel port in each patient was increasing the cost of procedure. 2) There were difficulties in using newer ports and their endoeye scope and curved instruments. ¾ Initial cost and maintenance cost was almost equal with single incision 2 port laparoscopic appendectomy with conventional laparoscopic appendectomy. But caecum should be adequately mobile to deliver appendix through the incision. We had not encountered this difficulty in any case we done.

CONCLUSION:

After comparison between two procedures, single incision laparoscopic appendectomy is good in post operative pain, cosmetic outcome, post operative hospital stay and return to daily routine activities than conventional laparoscopic. But complication rate is more in single incision procedures due to incision length is more in that procedures. Operative time and conversion rate is more in single incision procedures due to long learning curve. But this learning curve will be overcome in nearby future due to widely acceptance of minimally access surgery concept.

REFERENCES

1. Pelosi MA, Pelosi MA., 3rd Laparoscopic appendectomy using a single umbilical puncture (minilaparoscopy) J Reprod Med. 1992;37:588-94. [PubMed]
2. Dutta S. Early experience with single-incision laparoscopic surgery. Eliminating the scar from abdominal operations. J Pediatr Surg. 2009;44:1741-5. [PubMed]
3. Hong TH, Kim HL, Lee YS, Kim JJ, Lee KH, You YK, et al. Trans umbilical single-port laparoscopic appendectomy (TUSPLA): Scar less intracorporeal appendectomy. J Laparoendosc Adv Surg Tech A. 2009;19:75-8. [PubMed]
4. Chow A, Purkayastha S, Paraskeva P. Appendectomy and cholecystectomy using single-incision laparoscopic surgery (SILS): The first UK experience. Surg Innov. 2009;16:211-7. [PubMed]
5. Parveen Bhatia, Vinay Sabharwal, Sudhir Kalhan Single-incision multi-port laparoscopic appendectomy J Minim Access Surg. 2011 Jan-Mar; 7(1): 28-32. doi: 10.4103/0972-9941.72372