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ORIGINAL ARTICLE

TWO PORT LAPAROSCOPIC APPENDICECTOMY – AN ALTERNATIVE TO SILS AND NOTES

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ABSTRACT: INTRODUCTION: In conventional Laparoscopic Appendicectomy, three ports are used wherein both the umbilical and suprapubic port sites are hidden by the natural camouflages and the only visible scar is the third port in the iliac fossa. In two port technique we do not use the third port making the scars invisible. **MATERIALS AND METHODS**: From January to December 2013 we attempted 30cases of two port Laparoscopic Appendicectomy, of which 5 were converted to conventional three port technique. The third port for holding the appendix was replaced by a needle loop retractor**. RESULTS**: 25 cases underwent two port appendicectomy in one year period. They had short hospital stay, less pain, early mobilisation which is comparable to that of conventional laparoscopy. They had an advantage to invisible scars.
KEYWORDS: Laparoscopic appendicectomy, two port laparoscopic appendicectomy.

INTRODUCTION: Acute Appendicitis (AA) is one of the most common surgical emergencies encountered, for which there is an increasing trend towards Laparoscopic Appendicectomy (LA). The advantages of LA compared to open method are decreased pain, fewer post-operative complications, shorter hospitalization, earlier return to work and better cosmesis.[1, 2, 3] requiring three ports. No doubt single incision laparoscopic Surgery (SILS) can be done with special multiport umbilical trocar and specialized instruments but has a steep learning curve due to loss of triangulation, clashing of instruments, lack of maneuverability, decreased technical expertise among the surgeons and an added financial burden to the patients, thus limiting its widespread use especially in rural/peripheral centers with limited resource.[4, 5] Recent development is natural orifice trans-luminal endoscopic surgery (NOTES). But, there are numerous difficulties including, complications of opening hollow viscera, failed sutures, lack of fully developed instrumentation and necessity of reliable cost-benefit analyses.[6, 7] In conventional three-port LA (CLA) from a cosmetic viewpoint, the umbilical and supra-pubic port sites are hidden by natural camouflages, but scar of the third port in the iliac fossa is the only visible external sign of surgery. The two port LA (TLA) technique avoids even this marker of abdominal invasion. The technique, we are describing is virtually scar-less as the intra-abdominal entry points are hidden within the natural camouflages. This technique replicates the intra peritoneal view and operative technique of CLA, hence has a very short learning curve. Compared to SILS and NOTES, there is no need for expensive specialized equipment. TLA can be considered as the best procedure for selective cases of AA.[8]

MATERIALS AND METHODS: All patients presenting to surgical OPD at SSMCH, Tumkur with clinical features of AA were confirmed by ultrasonography were included. Patients who are unfit for General anesthesia, perforation with peritonitis, appendicular abscess and pregnancy were excluded.

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Informed consent from all the patients and ethical clearance from the committee were obtained. A detailed proforma was recorded, confirmed by ultrasound and laboratory blood investigations were done All operations were done under General anesthesia.

PROCEDURE: In TLA, after creating pneumoperitoneum, one 10mm camera port and another 5mm supra-pubic working port just below the hair line are introduced. A hypodermic needle with poly-propelene loop (fig. 1) is introduced in the right iliac fossa to retract the appendix (fig. 2, 3). With bipolar diathermy, mesoappendix is cauterized and the cut (fig. 4). Roeder knot with vicryl 1-0 is made, introduced into the abdomen with Maryland forceps. Appendix released from the prolene loop, introduced into the vicryl loop and again held taught by the prolene loop. Appendicular base ligated with vicryl using a knot pusher (fig. 5). Similarly one more vicryl knot is applied to the appendix just distal to it. Appendix is cut in between the knots and delivered out through umbilical port. TLA was done (fig. 6). Those cases which were difficult for TLA were converted to CLA by introducing the third 5mm port in right iliac fossa. Total duration of the procedure was calculated from the time of incision upto the completion of skin closure. Pain in the post-operative period was rated using a Visual Analogue Scale (from 0 to 1). Procedure related complications during and after operations, viz. wound infection, adhesions, hernia, reasons for extended hospitalization were recorded. Patients will be discharged from the hospital once they are fully mobilized and able to tolerate a normal diet.

RESULTS: Of the total 30 cases, 5 required conversion to CLA (2 peri-appenidicular adhesions, 3 retrocolic appendix). Among 25 included, we had 12 men, 8 women, and 5 children aged <8 years who underwent TLA. In all these 25cases there was no difference compared to CLA. The two scars were invisible after 3 months as they were hidden by the natural camouflage and hence patients had better cosmetic satisfaction. For the surgeons there was no difference in technique except to get oriented for traction of appendix using needle with prolene loop retractor which can be accustomed in the initial 3 cases of TLA. There were extensive adhesions in 2cases, which posed difficulty in releasing and visualization of appendix with one working port. 3cases were retrocolic appendices with a narrow mesoappendix which we could not release. Hence in these 5cases we had to convert TLA to CLA.

DISCUSSION: Appendicitis is one of the most common surgical emergencies encountered, for which there is an increasing trend towards Laparoscopy as a treatment modality. Surgical advancement in the management of AA has evolved dramatically in the last 120 years, from McBurney's simple large incision, to minimally invasive LA, to barely noticeable incisions after Single Incision Laparoscopic Surgery (SILS).[9] LA significantly decreases the requirement of post-operative analgesia.[10] Two-port Laparoscopic Appendectomy (TLA) has all the advantages of Conventional Laparoscopic Appendectomy (CLA) with significantly reduced operative time and cost. Ours is modified technique of Ashwin Rammohan et al.[11] The needle with loop retractor has an added merit of holding the appendix even with extensive inflammation, enables the surgeon for stable manipulation and gives better counter-traction than conventional forceps[11]. Also with the intraoperative view the surgeon can decide the best site for placement of the needle-loop which is ergonomically and cosmetically suitable[11]. The only drawback is that it is difficult if there are dense adhesions or long retrocolic appendix. In such cases it can easily converted to CLA by placing an additional trocar in the right iliac

fossa – "port rescue"[4]. TLA can be considered as best procedure for selective cases of AA.[8] TLA is a better procedure over CLA and Open technique with significantly shorter operative time, lesser incidence of surgical sites infection, lesser post-operative pain and significantly lesser hospital stay.[2] TLA has an advantage over SILS and NOTES in being safe, easy, feasible, not requiring specialized instruments and also economical.[11] TLA is a safe and feasible in children with the operative time and post-operative complications being the same to that of CLA.[12]

CONCLUSION: Two port Laparoscopic appendicectomy is safe, cost-effective, cosmetically effective, easy to learn and perform. Its aesthetic benefits are comparable to SILS and NOTES without requiring any special instruments. If intra-operatively found to be difficult, it can be converted into conventional laparoscopy by introducing a third port.

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Fig. 1: Prolene suture material traversed through a hypodermic needle (Needle- prolene loop port)

Fig. 2: Needle–prolene loop inserted transparietally

Fig. 3: Appendix being held by the prolene loop

Fig. 4: Meso-appendix cauterized using bipolar diathermy

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Fig. 5: Appendicular base ligated with vicryl roeder

Fig. 6: Two ports closed after appendicectomy

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