THE EXPERIENCE OF TRANS UMBILICAL CONVENTIONAL APPENDICECTOMIES

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ABSTRACT

Background: Acute appendicitis is the most common aetiology of the acute abdomen, generally requiring urgent surgical intervention. The lifetime incidence of acute appendicitis is approximate 7%.

Objective: The aim of this study was to evaluate the safety, feasibility, and cosmetic result of a novel approach i.e. conventional appendectomy via the trans umbilical route using routine open surgery instruments.

Material and Methods: This prospective study was conducted in Surgical unit Hayatabad Medical Complex Peshawar, included 62 selected cases during period from Jan 2009 to Jan 2010 after taking permission from local ethical and research committee. Inclusion criteria were a thin built patient with acute classical presentation in early stage of appendicitis, cases posted for interval appendicectomies and recurrent attacks of appendicitis. Excluded from study group were those patients who presented with complications of mass formation /abscess, undiagnosed obscure causes of RIF pain with no classic history or findings and patients with pelvic peritonitis, pregnant patients and with history of cirrhosis or coagulation alterations.

Results: The ages of the patients were 13–56 years (mean age, 32.7 ± 15.4 years). Conventional appendicectomy was safely performed in 56 (90.3%) out of 62 cases, through single incision trans-umbilical route. In remaining 6 (9.7%) cases an additional right iliac fossa incision with muscle cutting had to be employed for dissection of adhesions and retrocaecal /sub-hepatic positions of inflamed appendix. The calculated conversion rate was about 9.6%. The mean operative time was almost same compared to routine surgery by Mc Burney incision (27 min v/s 22 min). The average hospital stay was 3 days. All patients werefollowed up for 3 months. Six cases reported with seroma and mild infection from umbilicus which resolved spontaneously with conservative treatment. The estimated infection rate was 5.3 % in our study. None of the patients had any incisional hernia postoperatively.

Conclusion: The transumbilical single-incision open approach with minimal invisible scar is seen as a feasible technique for performing appendectomy in properly selected cases, does not increase the rate of complications and represents a possible alternative to conventional appendicectomy through open right iliac fossa incision.

Key Words: Transumbilicalappendicectomy (TUA), Conventionalappendicectomy.

INTRODUCTION

Acute Appendicitis and its complications are the most common causes of pain in right iliac fossa of abdomen in patients admitted to surgical wards.In a lifetime, 8.6 % males and 6.7 % females can be expected to develop acute appendicitis[1]. Since Semm[2]published the first complete removal of the appendixvia laparoscopic surgery in 1983 and Schreiber[3] performed the first laparoscopic appendectomy in a patient with acute appendicitis in1987, laparoscopic appendectomy has been included in practicallyall hospitals worldwide as the usual procedure in emergency departments.

The tendency towards reduced patient morbidity after surgery has enabled the development of techniques requiring an increasingly less invasive access to the operating field. Over the last decade, surgeons in a bid to be less invasive and provide greater comfort to patients, have developed means of access to the abdominal cavity with less surgical trauma such as natural-orifice transluminal endoscopic surgery and single-incision laparoscopic surgery[4,5]. The use of single-incision surgery may represent an improvement over conventional laparoscopic surgery. With the number of incisions reduced to one umbilical incision, the potential advantages would be a better cosmetic outcome[6].

The umbilicus, located in the thinnest part of the abdominal wall, makes it easier to insert the triple-entry port, move in all directions, and then close the orifice under direct vision to avoid the possibilities of incisional hernia[7].

The aim of this study was to evaluate the safety, feasibility and overall cosmetic outcome keeping in

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mind the cost effectiveness, when taken up in a primary or secondary care setting where advanced endoscopy equipment and expertise is not available.

MATERIAL AND METHODS

This prospective randomized controlled study was conducted at Hayatabad Medical Complex, Peshawar from January 2009 to January 2010 after approval from hospital ethical and research committee. A total of 62 patients with suspected clinical acute appendicitis were included in the study after informed consent, including both males and females, with the age range of 13–56years with mean age of 37.7±15.4 years.

Patients with thin built and lax abdominal wall, acute classical presentation in early stage of appendicitis, cases posted for interval appendicectomies and recurrent attacks of appendicitis were included in the study. Patients with a history of cirrhosis or coagulation alterations, patients with clinical or radiological suspicion of appendicular pathology complicated by an abscess and/or local or diffused peritonitis, patients with septic shock, pregnant patients and patients unable to sign the informed consent form because of mental disorders were excluded from the study.

The diagnosis of acute appendicitis made on the basis of history of right iliac fossa pain, nausea and vomiting and on clinical examination showing rebound tenderness and with supporting evidence of leucocytosis greater than 10,000. The purpose and benefits of study was explained to the patients, the patients were well informed about risks and benefits of both the techniques of wound closure and a written and informed consent was taken. After ascertaining complete history, thorough clinical examination was done and a complete set of routine investigations sent.

All appendicectomies were performed under general anaesthesia and all patients received single intravenous 1.5 gram cefuroxime and metronidazole infusion before the skin incision. A vertical incision was put through thinnest deeper part of umbilicus extending into lower half of umbilicus for a length ranging between 2cms and maximum of 3 cms in slightly obese individuals. Linea alba was split after dissecting subcutaneous fat and peritoneum entered and ends grasped with forceps. A slender long babcock'stissue holding forceps was passed towards the right iliac fossa (preferably the operating surgeon standing towards left side of the patient). The antecolic, pre ileal or post ileal or pelvic positioned appendix were easily grasped by the babcock's tissue forceps and gently brought out through the umbilical wound. As in formal open surgery transfixing ties are applied both for the mesoappendix and base of appendix and appendectomy done. The incision is closed in 2 layers taking care to close the defect in linealba with Vicryl-1 and skin with prolene 2/0. The data was analysed using SPSS version 11.The p-value of <0.05 was considered significant.

RESULTS

Between Jan 2009 and Jan 2010, a total of 62 consecutive patients (37 males and 25 females) aged 13 to 56 years (mean,37.7±15.4) with suspected appendicitis underwent trans-umbilical open appendicectomy. Of the 62 cases selected for the study, the procedure was safely performed in 56 (90.3%) cases through trans umbilical route. In the remaining 6 (9.7%) cases, an additional right iliac fossa incision with muscle splitting in 2 patients and muscle cutting in 4 cases had to be done in view of dense adhesions to lateral abdominal wall and retrocaecal position of appendix Table 1.

The conversion rate in this procedure was 9.7 % due to intraoperative factors mentioned above, which can be regarded as fairly acceptable keeping in mind the cosmetic outcome if done successfully via trans umbilical route Table 1.

Table 1: Post-operative complications and conversion rate

Variables	Numbers	Percentage
Seroma/Hematoma	3	5.3
Infection	3	5.3
Incisional Hernia	0	0
Conversion to RIF incision	6	9.7

In successfully operated cases, the mean operation time was comparable to traditional approach surgery (27 min v/s 22 min). The average postoperative hospital stay was 3 days in all cases. All patients were followed up for a period of 3- 6 months postoperatively. None of the patients reported incisional hernia.

Three (5.3%) of the successfully operated patients via trans umbilical route had minimal seroma/hematoma and 3 (5.3%) had mild infection and discharge from umbilicus which resolved spontaneously with conservative treatment. The umbilical invisible scars were cosmetically acceptable in all of these 56 patients. The infection rate of umbilical wound was 5.3% in our study series Table 1.

DISCUSSION

The management of appendicitis is at the core of general surgery practice. In recent years, the search for less morbidity and greater patient comfort has led surgeons to newer means of access to the abdominal cavity with less surgical trauma, such as natural-orifice transluminal endoscopic surgery, single incision laparoscopic surgery and trans-umbilical appendicectomy. The scarce reproducibility and difficulty involved with the natural orifice technique have meant that most surgeons opt for the single-incision technique, as the similarity between conventional laparoscopy and non-requirement of specific equipment places it within the reach of any

surgeon.

Our study was solely done with intention of giving cost effective cosmetically acceptable scar to the poor patients coming to the government hospital, who cannot afford to have advanced endoscopic surgeries.

The single-incision trans-umbilical appendicectomy may have advantages over conventional open appendicectomy: greater patient comfort, less postoperative pain, and a better cosmetic outcome due to a scar less procedure.As seen in this study, the trans-umbilical single-incision approach is feasible and safe and there is no greater incidence of complications, than reported in previous prospective studies[8,9,10], despite these studies having a smaller sample size than ours.

One of the theoretical advantages intended with the trans umbilical approach was greater comfort for patients and less pain, as was also noted in our series. This might be achieved by reducing the size of the skin incision and not cutting the muscle. Other previous prospective studies show no differences[8,10,11] or report greater postoperative pain, which requires higher doses of analgesics but prescribed for fewer days[9,12].

As far as operating time is concerned, most studies published[8,12] reveal a longer operating time than conventional laparoscopy, somewhat similar to our series.The mean operative time was almost same compared to routine surgery by Mc Burney incision (27 min v/s 22 min). Similarly mean operating time was 25 min in transumbilical open appendicectomy by Arif M[13] as compared to 27 min in our study. The average hospital stay was 3 days in our study, as compared to 4 days in a study by Arif M[13].

One of the other intraoperative complications that may occur with the laparoscopic approach is damage to the epigastric vessels[14] and intestines or mesentery leading to an emergency situation and reoperation. This complication would be avoided with the umbilical approach. Infection of the surgical wound is an uncommon occurrence with this type of pathology. About 5.3% patients had post-operative wound infection, as compared to 9.3% in a study by Arif M[13] respectively. All wound infections were treated conservatively. A recent study in 2011 by St Peter et al, reports a 3.3% surgical site infection rate in a series of 180 patients[12].

About 5.3% had mild serous discharge from wound, treated conservatively. The umbilicus located in the thinnest part of the abdominal wall, can be closed under direct vision to avoid the possibilities of incisional hernia[15]. None of the patients in our study developed post-operative incisional hernia probably due to short follow up of three to six months.

CONCLUSION

In conclusion, we believe transumbilical open appendectomy is a feasible, effective, safe and maneuverable method. Like any procedure having its own merits and demerits, this procedure has its own limitations in operating on obese individuals, strong musculature, athletic build, inadequate relaxation and above all the different positions of appendix itself. As cosmesis is the order of the day, this novel approach can still be considered in properly selected cases in places, where cost is limiting factor and advanced endoscopy equipment'sare not available or when there exists a lack of laparoscopy trained personnel. Further study with a longer-term follow-up may be needed to confirm the clinical value of the procedure.

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