

Mediciti Institute of Medical Sciences, Ghanpur, Medchal. Early Laproscopic Appendicectomy for Appendicular Mass

Prof. Shaik Mahaboob¹, Dr.J.Yadagiri Rao (asso.prof) ² and
Dr Ramu damuluri(PG)³

¹Former professor in gandhi medical college and retired.

²Former asst. In gandhi medical college and presently working as associate professor in mediciti institute of medical sciences.

³Former PG in gandhi medical college and presently working as MCH surgical oncology in St.Johns medical college.

Abstract: With the addition of laparoscopy in the armamentarium of surgeon, a prospective randomized study was carried out by a single surgeon regarding safety and feasibility of early laparoscopic appendicectomy for appendicular mass. The single surgeon study is having the added advantage of maintenance of uniformity in the evolution of patients, operative and post operative management.

Key Words: Appendicular mass, Appendicectomy, conservative, Laproscopy

I. Introduction

The conservative treatment for appendicular mass was proposed more than 100 yrs ago (by ochsner – sherren, in 1901) and is still widely followed. The fear of injury to bowel followed by feecal fistula¹, difficulty in finding appendix in a mass surrounded by inflamed bowel and omentum, messy surgical field due to the capillary bleeding from inflamed tissues, has precluded the surgeons for doing immediate appendectomy in appendicular mass, for a long time. But over the period different studies^{2, 3, 4,7} have high lightened the complications and problems associated with conservative management. Several ^{1, 2,3,4,5} studies outlined the advantages of early appendicectomy for appendicular mass to counter the problems associated conservative management of appendicular mass followed by interval appendicectomy.

II. Materials And Methods

This prospective random study of early laparoscopic appendicectomy for appendicular mass was started in June 2008 and continued till today in different hospitals at different places. Appendicular mass is presenting with the history of one or more attacks of acute appendicitis, clinically palpable or radiologically suspected and laparoscopically confirmed inflammatory mass containing inflamed appendix, omentum and adjacent viscera with or without pus. Patients with history of acute abdominal pain, nausea, vomiting and loss of appetite of 5 to 8 days duration with clinical findings of tenderness in right iliac fossa and palpable or ultrasonically suspected appendicular mass were subjected to diagnostic laparoscopy and further procedure. Laparoscopically proved all appendicular mass patients are included in this study. As the study is about feasibility, advantages and complications of immediate laparoscopic appendicectomy in appendicular mass, the diagnostic problems are not discussed. Fifty eight patients with appendicular mass had undergone laparoscopic appendicectomy. Intra operative findings of mass were recorded. The intra operative and post operative complications were noted.

III. Technique

One telescopic port (10mm) at the umbilicus and two working ports are placed. One working port was placed in the mid line supra pubically (5mm) and another at lateral to left rectus muscle(10mm), in between the umbilical and supra pubic port making a triangle. If necessary one more port was placed in right iliac fossa especially in appendicular abscess and that was used for placement of abdominal drain. Appendicular mass was visualized. Careful and gentle dissection was done with blunt instruments and suction apparatus. Adhesions were released. Dense adhesions were seen between appendix and caecum in 26 patients. The identification and dissection of appendix was difficult and more time was spent with slow and patience dissection to prevent any injury to adjacent structures. In remaining patients the dissection was not difficult. Laparoscopic appendicectomy could be carried out in all the patients. There was no major injury to any organ except for minor serosal tears of caecum and ascending colon in cases of adherent retrocecal appendicitis. There was no need of open conversion in any patient. In cases with pus, a tube drain is kept in pelvis via supra pubic port or through the port in right iliac fossa. The drain was removed after 48 to 72 hours. Routine post operative

management is followed. Post operatively all the patients were given antibiotics (third generation cephalosporins, metronidazole and amino glycosides) for one week.

IV. Observations

Diffuse mass measuring about 10 ± 5 cm x 8 ± 5 cm x 6 ± 8 cm present in right iliac fossa consists of omentum, ileum, caecum, ascending colon and appendix. Dense adhesions were seen between appendix and caecum with a history of more than one acute attack In 24 patients with retrocaecal appendix and in 2 patients with pelvic appendix. 16 patients had pus collection around appendix. Classical Appendicectomy in 54 cases and retrograde appendicectomy in 4 patients was carried out. Left para rectal Port site infection was noted in 6 patients in the first 20 patients. The inflamed appendix was much larger than the 10 mm port and could not be negotiated through the trocar. While removing, the infected appendix has touched the port site skin and sub cutaneous tissue resulting in infection. The infection has resulted even after thorough cleaning of the port site with povidine iodide. In later cases glove finger was used to carry the inflamed appendix and bring it out. Post operative ultra sonography was done in all patients one week after surgery. No residual abdominal abscess was noted in our series. Post operative period was uneventful in all cases except port site infection in 6 patients which could be treated.

Analysis

Total no of cases are 58 Males are 42(72.4%) and females are 16(27.5%). Duration of symptoms varied from 5 to 8 days. Analysis of duration of the symptoms and the position of appendix has shown below. 65.6% patients had retrocaecal appendix. Delayed presentation is seen in these patients. Average duration of symptoms is 7 days. Whereas patients with Pelvic, paracaecal, sub caecal and pre ileal positions presented earlier than patients with retrocaecal appendix. Average duration is 5 days.

Table: 1 analysis of different positions of appendix and duration of symptoms n=58

Position of appendix	Male N=42	Female N=16	Total N=58	Duration of symptoms
Retrocaecal	29	9	38(65.5%)	Average 7days (5 to 8 days)
Pelvic	8	5	13(22.4%)	Average 5.5 days (5 to 6 days)
Para caecal	2	2	4 (6.89%)	Average 5 days
Sub caecal	2	0	2(3.44%)	Average 5 days
Pre ileal	1	0	1(1.72%)	5 days

There was no previous history of an acute attack in 24 patients. Dense adhesions were not seen in these patients. Past history of 1-3 acute attacks was present 34 patients. 26 of the 34 had dense adhesions. Regarding the position of appendix, of the 38 patients with retrocaecal appendix, 24 had dense adhesions. Only 2 of the 20 patients with remaining positions of appendix had dense adhesions. The time taken for surgery varied from 45minutes to 130 minutes.

Table.2: analysis of dense adhesions found with position of appendix and number of acute attacks .n=26

position of appendix	number of patients	number of previous acute attacks			dense adhesions found in number of patients	
		0	>1to3	>3	male	female
retrocaecal	38	10	28	0	18	6
Pelvic	13	8	5		0	2
paracaecal	04	3	1		0	
Sub caecal	02	2	0		0	
Pre ileal	01	1	0		0	
total	58	24	34	0	18	8

Of the fifty eight, 16 patients had pus collection around appendix. The amount of pus varies from 10ml to 200ml. The closed tube drain was kept in 10 patients with presence of more than 20 ml pus. Drain was kept as long as it is functioning. The average duration was 3 ± 1 day.

Table 2: analysis of patients presenting with pus around the appendix, n= 16

Age in years	Male N=42	Female N=16	duration of symptoms in days	Presence of pus	
				Male N=11	Female N=5
15-20	6	4	4-6	1	0
21-30	12	6	5-7	4	2
31-40	16	4	5-8	3	2
41-50	8	2	4-6	3	1

No case was converted to open method. No major injury occurred to any organ. The blood loss was between 50ml to 100ml. The average duration of hospital stay for patients without drain is 2±1 day. In patients with drain (10) the average duration of hospital stay is 6±2 days. The presence of co morbid condition such as diabetes, post operative pneumonia delayed the discharge (6±2days) from hospital in 4 patients. Post operative complications: Port site infection was noted in 6 patients.

V. Discussion

10% of acute appendicitis patients present with appendicular mass¹⁰ Patients presenting with appendicular mass can be a phlegmon or abscess. The phlegmon can be treated conservatively (oschner –sheren regime) and about 68-84 %¹⁴ of them get resolved. Elective appendicectomy is to be planned, 4-6 weeks after resolution. During the interval period, 50% of patients are coming back with recurrent acute attacks^{5, 6, 7} and emergency appendicectomy becomes inevitable, which is as difficult as appendicectomy in appendicular mass. Hence opinions are varied regarding optimum interval for interval appendicectomy. Even after 6-8 weeks of interval, mass was noticed per operatively in 7.14%¹⁹ patients, though mass was not palpable clinically. This suggests that even though acute phase of inflammation might have subsided, the process of inflammation was not abated. This is the probable reason for not complete resolution of mass. In interval appendicectomy patients, Arshad et al¹⁹ noticed that, in 76-78% patients there is a difficulty in adhesiolysis due to dense adhesions and a difficulty in localizing the appendix in 66.66% patients. Garg.p. et al¹³. reported that missing of diagnosis of ileo ceacal tuberculosis, carcinoma caecum and intussusception in 15% of patients diagnosed to have appendicular mass. This has resulted in delayed diagnosis with consequent increased morbidity^{2,4} 25-30%^{13,17} of appendicular masses were found to be having either appendicular abscess or peri appendicular pus collection. Arshad et al found that 9.1% patients had appendicular perforation and 4.5% patients had appendicular abscess which necessitates early appendicectomy. Conservative management proved unsuccessful in these patients and required emergency surgery which was comparatively more difficult^{11, 12}. Appendicular abscess drained extra peritoneally and taken up for appendicectomy after 4 weeks were found to have multiple dense adhesions. Patients presenting with abscess has to undergo surgery twice with prolonged morbidity. With the above problems coming to galore by the publication of several studies^{2,4,13,17,19}, the advantages of early appendicectomy have also been put forward by the Several studies^{2,3,4}. Early appendicectomy has got the advantages of avoidance of misdiagnosis, shorter hospital stay¹⁹, no requirement of readmission, early return to the work¹⁹, and prevention of sepsis due to appendicular perforation and unresolved appendicular abscess formation. The improvement in anaesthesia procedures, availability of wide range of broad spectrum antibiotics and better post operative care, made the surgery on the appendicular mass is no more prohibited area. Samuel et al.⁹ stated that, the meticulous and careful technique adopted at laparotomy influenced the outcome in early appendicectomy and was not affected by the presence of oedematous and friable tissue. A number of studies consider early appendicectomy in appendicular mass is safe, economical and time saving, facilitating an early return to work (Sardar Ali et al 2010).. Early open appendicectomy has got its share of complications and many of them related to infection⁶. Arshad.m.malik et al.¹⁹ has reported post operative complications of wound sepsis in 15.9% , residual abscess in 1.1% and partial wound dehiscence in 4.5% patients. utpal.d⁸ has reported the complication rate is as high as 31.8%.

M.A.Bahram¹³ reported that 26% patients needed extension of Mc burney’s incision by cutting the muscle due to large appendicular mass. He also reported that superficial wound infection (skin and subcutaneous tissue) had occurred in 17% while deep wound infection (including the muscle) occurred in 9% patients whom their operative finding was appendicular abscess. The follow up of the patients revealed that 7% patients, who had deep wound infection, developed incisional hernia. These big muscle cutting incisions are prone for wound infection with a prolonged morbidity. Hence incisional hernias are likely to develop in these patients. So the complications of early open appendicectomy in these cases are due to inadequate access to all the dimensions of mass, spillage pus and contact of infected appendix with deep layers of incision resulting in wound infection, requirement of extension of incision. Deep wound infection and muscle cutting incisions may lead to incisional hernias.

Thorough peritoneal lavage and aspiration cannot be done through Mc Burney's incision resulting in residual abscess. It is not easy to do appendicectomy in appendicular mass with mid line or right paramedian incision especially in obese patients. Laparoscopic surgery has changed the scenario of open surgery. The advantages of laparoscopic appendicectomy are well accepted. Several studies^{4,6,18} have found that early laparoscopic appendicectomy in appendicular mass is feasible and advantageous. It has the advantages of early surgery and advantages of laparoscopy. Advantages of early surgery are decreased duration of hospitalization, decreased duration of therapy, avoidance of misdiagnosis and its consequences¹³, prevention of recurrent attacks during interval period, prevention of sepsis due to perforation and abscess formation. Advantages of laparoscopic surgery are very small incisions are given to pass the laparoscopy equipment, there is no need of retraction of tissues to visualize and approach no contusions to tissueless post operative. Specific advantages of laparoscopic surgery in appendicular mass are 1. clear visualization of all the dimensions of mass, which is not always possible in open surgery. 2. Entering the peritoneal cavity from far away healthy area, hence the chances of wound infection are less. 3. The pus can be aspirated without spilling into the surrounding area; thereby preventing the contamination of surrounding area. 4. Thorough saline lavage and aspiration under vision can be done. It decreases the chances of development of residual abscess. 5. Thorough saline lavage and aspiration removes all the pus and infected material results into rapid reduction of toxicity and early recovery. 6. Long muscle cutting incisions are avoided; hence development of incisional hernias can be prevented. All these advantages decrease the morbidity and hospital stay.

VI. Observations

1. The blunt dissection during laparoscopy mainly with suction cannula found to be very effective in aspirating pus completely without opening parietal wall.
2. By laparoscopic method we are approaching the diseased from normal area which is proved to be advantageous in recovery of patients.
3. The whole abscess can be clearly drained under magnified vision thereby avoiding missing of residual abscess unlikely.
4. Peritoneal lavage can be done clearly under vision that leads to reduction of toxicity and morbidity.
5. with laparoscopy we can see all the dimensions of mass which makes dissection complete.
6. In phlegmon complete visualization of appendix makes dissection easier, if there is a undiagnosed abscess that can be dealt appropriately without contamination.

Out of 3 patients with appendicular abscess, two patients recovered rapidly

VII. Conclusion

An early surgery in appendicular mass is no doubt useful but when we do it with laparoscopically it proves to be more advantageous to patients. It is safe and feasible in experienced and skillful hands.

References

- [1]. Vargas HI, Averbook A, Stamos MJ. Appendiceal mass: conservative therapy followed by interval laparoscopic appendectomy. *Am J Surg*. 1994;(60):753-8.
- [2]. Al-Sammarai AY. Surgery for appendicular mass. *Saudi J Gastroenterol*. 1995;(1):43-6.
- [3]. Choudhry ZA, Syed AS, Mishra P. Early exploration of appendicular mass. *Pak J Surg*. 1996;12(2):64-6.
- [4]. Garg P, Dass BK, Bansal AR, Chitkara N. Comparative evaluation of conservative management versus early surgical intervention in appendicular mass—a clinical study. *J Indian Med Assoc*. 1997;95(6):179-80.
- [5]. De 6. U, Ghosh S. Acute appendicectomy for appendicular mass: a study of 87 patients. *Ceylon Med J*. 2002;47(4):117-8.
- [6]. Senapathi PS, Bhattacharya D, Ammor BJ. "Early laparoscopic appendectomy for appendicular mass"; *Surg Endosc* 2002 Dec ; 16 (12),1783-5
- [7]. Ahmed I, Deakin D, Parsons SL. "Appendix mass: do we know how to treat?" *Ann R Coll Surg Engl*. 2005, May;87(3):191-5
- [8]. Utpal D "Laparoscopic versus open appendicectomy in West Bengal, India." *Chin J Surg*. 2005;6(4):165-9
- [9]. Samuel M, Hosie G, Holmes K. Prospective evaluation of nonsurgical versus surgical management of appendiceal mass. *J Pediatr Surg*. 2002;(6):882-6.
- [10]. Meshikhes A W, "Management of appendiceal mass; controversial issues revisited" *Gastro Intest Surg*. 2008; April;12(4):767-75.
- [11]. Foran B, Berne TV, Rosoff L. Management of appendiceal mass. *Arch Surg*. 1978;113:1144-45
- [12]. Janik JS, Ein SH, Shandling B, Simpson JS, Stephens CA. Nonsurgical management of appendiceal mass in late presenting children. *J Paediatr Surg*. 1980;15:574-6.
- [13]. M.A. Bahram. "Evaluation of early surgical management of complicated appendicitis by appendicular mass" *International J. Surgery* 9 (2011) 101e103
- [14]. Tannoury J, Abboud B. Treatment options of inflammatory appendiceal masses in adults. *World J Gastroenterol* 2013;19(25): 3942-3950
- [15]. Brown CV, Abrishami M, Muller M, Velmahos GC. Appendiceal abscess: Immediate operation or percutaneous drainage? *Am Surg*. 2003;69:829-832.
- [16]. Bagi P, Dueholm S. Nonoperative management of the ultrasonically evaluated appendiceal mass. *Surgery*. 1987;101:602-605.
- [17]. Khan A W, Sheikh S H, Rahman MA, "Results of emergency appendicectomy for appendicular mass" *Mymensingh Med J*. 2007 Jul;16(2):209-13

- [18]. Vishwanath V Shindholimath, K Thinakaran, T Narayana rao, Yenni Veerabhadappa Veerappa. Laparoscopic management of appendicular mass. *J Min Access Surg* 2011; 7(2):136040.8.
- [19]. Arshad M. Malik and Noshad Ahmad Shaikh (2012). Recent Trends in the Treatment of the Appendicular Mass, Appendicitis - A Collection of Essays from Around the World, Dr. Anthony Lander (Ed.), ISBN: 978-953-07-814-4, InTech,
- [20]. Sardar Ali, Rafique HM. Early exploration versus conservative management. *Professional Med J* 2010; 17(2):180-4.