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*Research Article*

### COMPARATIVE STUDY OF IMMEDIATE SURGICAL INTERVENTION VERSUS CONSERVATIVE TREATMENT IN APPENDICULAR LUMP

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#### Abstract:

**Objective:** Comparative study of immediate surgical intervention versus conservative management followed by interval appendectomy in appendicular lump.

**Study design:** Observational comparative study

**Place and Duration:** Department of surgery, Liaquat University Hospital from October 2016 to December 2017.

**Materials and Methods:** A sample of 100 cases of appendicular lumps was selected who fulfilled the inclusion and exclusion criteria. Diagnosis of appendicular lump was based on patient history, clinical examination, blood investigations and sonography. Patients were randomly divided into 2 groups. Group 1- appendicular lump with immediate surgery cases and Group 2- appendicular lump with conservative therapy. Age, clinical findings, duration of symptoms, hospital stay, functional recovery and post operative complications were noted. Statistical software SPSS 22.0 analysed the data variables (IBM, incorporation, USA) at 95% CI ( $P < 0.05$ ).

**Results:** Male and female in group 1 and 2 were noted as 39 (78%) and 11 (22%), 40 (80%) and 10 (20%) respectively ( $P=0.0001$ ). Male to female ratio was 3.76:1 Mean  $\pm$  SD age was found  $21.5 \pm 11.5$  years (10 – 60 years). Post operative complications such as intra- peritoneal abscess, necrosis, septicemia and wound infection were found significantly low in immediate surgery cases compared to conservative therapy ( $P=0.0001$ ). Overall incidence of complication was 3 (6%) in group 1 and 9(18%) in group 2 cases ( $P=0.0001$ ).

**Conclusion:** Immediate surgical intervention in cases of appendicular lump is preferred rather than conservative therapy followed by interval appendectomy.

**Key words:** Appendicular lump immediate surgery, Conservative therapy, Interval appendectomy

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**INTRODUCTION:**

Acute appendicitis is a common surgical problem presenting in the surgical emergency units [1]. Acute appendicitis may be grouped as complicated or uncomplicated appendicitis. An immediate appendectomy is the standard surgical approach for the uncomplicated appendicitis. However, in some of cases of late arrival, an appendicular lump is formed in approximately 2 - 6% cases. Lump is produced by the self defense peritoneal mechanisms in order to localize the infective pathology [2]. Appendicular lump formations are common at the extremes of ages [3]. Perforation of an appendicular lump is common which may complicate this surgical condition. Necrosis, abscess formation and gangrene of the appendix and related intestinal part and the peritoneal cavity are the complications of a perforated appendicitis. Appendicular lump is the end result of a walling-off effect of appendicular perforation by the omentum. Lump represents a pathological process ranging from phlegmon to abscess formation [2-4]. Appendicular lump is superseded by pathological process of localized pus formation called, the peri-appendicular abscesses to an inflamed appendix surrounded by peritoneum and nearby viscera to form a phlegmon. In delayed presentation an appendicular lump is seen in the right iliac fossa. Appendectomy is the standard surgical procedure for the acute appendicitis. However, if clinical presentation is delayed, then the conservative approach is considered a better choice [5,6]. However, this approach is also controversial because of added risk of complications [7,8]. Classically, an appendicular lump is managed conservatively with intravenous fluids and antimicrobial drug therapy till the resolution of appendicular mass. This is followed by interval appendectomy 4-6 weeks later. In cases of appendicular lump, an early appendectomy may prove hazardous and life threatening as it complicated with complications such as the abscess, septicemia, septic shock and fecal fistula [9-11]. However, an immediate appendectomy of appendicular lump without interval appendectomy has been employed [12, 13]. Interval appendectomy is still popular among surgeons, but early exploration is better choice because of low economical burden and few days of hospital stay without any major complications. Due to these controversies, there is need of conducting prospective studies to merit and demerit the surgical intervention in appendicular in terms of complications. The present study was conducted to compare the immediate surgical intervention versus conservative management in appendicular lump in terms of complications at our tertiary care hospital.

**SUBJECTS AND METHODS:**

Ethical approval for the present prospective observational study was taken from the institute. The study was conducted at the surgical wards of Liaquat University Hospital. It covered duration from October 2016 to December 2017. Six hundred and thirty cases of acute appendicitis were evaluated during this period. Of which a sample of 100 cases of appendicular lumps was selected who fulfilled the inclusion and exclusion criteria. Diagnosis of appendicular lump was based on patient history, clinical examination, blood investigations and sonography. Patients of 10- 60 years of age were included with confirmed appendicular lump. Patients with severe septicemia, age <10 years, and unstable blood pressure were excluded. Patients were randomly divided into 2 groups. Group 1- appendicular lump with immediate surgery cases and Group 2- appendicular lump with conservative therapy and interval appendectomy. Conservative therapy was given as per Ochsner- Sherren regimen. Strict supervision of patients was ensured for developing any life threatening complications. Fluid intake and output charting was maintained. Vitals were ensured. A pres- structured proforma was used for data collection. Age, pulse, blood pressure, nausea, vomiting, fever, abdominal pain, tenderness, right iliac fossa, intestinal obstruction, leukocytosis, sonography, duration of symptoms, hospital stay and functional recovery were noted. Post operative complications such as the intra- peritoneal abscess, necrosis, septicemia, wound infection and incidence of complications were noted. Legal heirs and volunteers were asked about willingness and signing of consent form. Volunteers were asked that refusal of no participation will not affect their clinical management. And participation will put no extra economical burden, harm or loss to them. Patient's record and surgical findings were kept confidential. Statistical software SPSS 22.0 analysed the data variables (IBM, incorporation, USA). Normality of data distribution of continuous variables was analysed by "Kolmogorov- Smirnov" testing. Continuous variables were analyzed by "Student t-test" and results were presented as means and SD. Categorical data was analyzed by "Chi square test" and results presented as frequency and percentage. Statistical analysis of significance was taken at 95% CI ( $P < 0.05$ ).

**RESULTS:**

Male and female in group 1 and 2 were noted as 39 (78%) and 11 (22%), 40 (80%) and 10 (20%) respectively ( $P=0.0001$ ). Male to female ratio was 3.76:1 Mean  $\pm$  SD age was found  $21.5 \pm 11.5$  years

(10 – 60 years). 10- 29.9 years was the common age category followed by 30- 39.9 years ( $P<0.05$ ) (Table 1 and Graph 1). Clinical manifestations and laboratory findings are shown in table 2. Appendicular lump was noted by sonography and physical examination. Hospital stay and functional recovery are shown in table 2 which shows significantly rapid improvement in group 1

(immediate surgery cases) ( $P<0.05$ ). Frequency of post operative complications such as intra- peritoneal abscess, necrosis, septicemia and wound infection was significantly low in group 1 (immediate surgery cases) ( $P=0.0001$ ). Overall incidence of complication was 3 (6%) in group 1 and 9(18%) in group 2 cases ( $P=0.0001$ ).

<b>Table. 1. Age distribution of study subjects</b>			
<b>Age (years)</b>	<b>Group 1 (n=50)</b>	<b>Group 2 (n=50)</b>	<b>P-value</b>
10 - 19.9	13 (26%)	11 (22%)	0.093
20 - 29.9	11 (22%)	12 (24%)	
30 - 39.9	11 (22%)	12 (24%)	
40 - 49.9	7 (14%)	8 (16%)	
50 - 59.9	3 (6%)	3 (6%)	
>60	5(10%)	4(8%)	
Total	50 (100%)	50 (100%)	

<b>Table. 2. Clinical manifestation and laboratory findings</b>			
	<b>Group 1 (n=50)</b>	<b>Group 2 (n=50)</b>	<b>P-value</b>
Nausea	47 (94%)	43 (86%)	0.81
Vomiting	43 (86%)	45 (90%)	0.93
Fever	45 (90%)	44 (88%)	0.95
Abdominal pain	47 (94%)	42 (84%)	0.78
Tenderness	49 (98%)	48 (96%)	0.91
Right iliac fossa lump	33 (66%)	47 (94%)	0.0001
Sonography showing lump	47 (94%)	49 (98%)	0.91
Intestinal obstruction	11 (22%)	19 (36%)	0.01
Leukocytosis	49 (98%)	43 (86%)	0.87
Blood Pressure (mmHg)	112.5±10.5	115.5±9.5	0.75
Pulse (bpm)	69.5±11.5	71.5±10.5	0.34
Symptoms duration (days)	8.5±3.5	9.5±3.7	0.45
Hospital stay(days)	6.5±2.5	7.3±3.5	0.001
Functional recovery (days)	3.5±1.5	6.5±2.9	0.0001

<b>Table. 3. Post operative complications (n=100)</b>			
	<b>Group 1 (n=50)</b>	<b>Group 2 (n=50)</b>	<b>P-value</b>
Intra Peritoneal abscess	1 (2%)	11 (22%)	0.0001
Necrosis	3 (6%)	17 (34%)	0.0001
Septicemia	4 (8%)	9 (18%)	0.001
Wound infection	7 (14%)	15 (30%)	0.0001
Incidence of complications	3 (6%)	9(18%)	0.0001

### DISCUSSION:

The present prospective comparative study reports on outcome of immediate surgical intervention versus conservative treatment in appendicular lump from out tertiary care hospital. It has been reported that the interval appendectomy after initial conservative management of appendicular lump is associated with abscess, but remains controversial. Recurrence of appendicitis is prevalent, and this has been observed within 2 years, after that recurrence rate decreases [14-16]. Recurrence rate of upto 37% has been reported rate after conservative treatments. Some of studies recommended interval surgery after conservative therapy [17-19] but recurrence rate of appendicitis is very high with this strategy [20]. Complications incidence of 12–23% has been reported in those who underwent interval surgery after conservative therapy [17-20]. Hence, some of authors [21] have reported immediate surgery of appendicular lump yields better results compared to interval surgery. These findings are supported by evidence- based findings of present study. In present study, an overall incidence of complication was 3 (6%) in group 1 and 9 (18%) in group 2 cases (P=0.0001), this is strongly supported by previous studies.<sup>4,6</sup> Mean± SD age was found 21.5 ± 11.5 years (10 – 60 years). 10- 29.9 years was the common age category followed by 30- 39.9 years (P<0.05). These findings are supported by previous studies.<sup>11,12</sup> Majority of subjects belonged to 15- 30 years of age, this is consistent to age group as reported by a recent study. Male and female in group 1 and 2 were noted as 39 (78%) and 11 (22%), 40 (80%) and 10 (20%) respectively (P=0.0001). Male to female ratio was 3.76:1. Male dominance is consistent with a previous studies [3,5,21]. A recent study [21] reported M:F ratio of 1.89:1 this ratio is less than the present study, but the male dominance is a supporting finding. Appendicular lump was noted by sonography and physical examination. Majority of appendicular lump formation was the delayed clinical

presentation. Majority of group 1 subjects were operated immediate without major complications compared to group 2 conservative therapy. This is in agreement with previous studies [3,5,21]. Hospital stay and functional recovery was significant in group 1 immediate surgery cases (P<0.05), these findings are supported by previous studies [3,5,21]. Frequency of post operative complications such as intra-peritoneal abscess, necrosis, septicemia and wound infection was significantly low in group 1 (immediate surgery cases) (P=0.0001). These observations are in agreement with previous studies [6-9,21]. The present study concludes the immediate surgery offers less days of hospital stay, low economic burden, less complications, low incidence of recurrence and early return of patients to work place. These results are in agreement previous studies [5-10,21]. The present study is a contribution to the clinical experience of immediate surgical procedure in appendicular lump. The strength of study is weighed by the prospective nature of study design. Major limitation of study is small sample size however; the findings are highly worth to report as it is of clinical importance

### CONCLUSION:

The evidence based findings of present study concludes the immediate surgical exploration of appendicular lump is preferred rather than conservative therapy and interval appendectomy because of low economic burden, less complications and recurrence, less days of hospital stay, and early return of patients to work place. The present study suggests further research with large sample size.

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