

Original Article

AMYAND'S HERNIA IN CHILDREN; 10 YEARS SINGLE CENTER EXPERIENCE

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Objective: To determine the presenting features and management of patients having Amyand Hernia.

Methods: This retrospective study was conducted at Paediatric Surgery Department of Services Hospital, Lahore. All the patients diagnosed as Amyand's hernia in last 10 years from January, 2007 to December, 2016 were included in the study. Their file records were reviewed and all the data was analyzed by simple descriptive statistics.

Results: During this period, a total of 3213 inguinal herniotomies were done. Of these, 27 patients had Amyand hernia and incidence was calculated as 0.8%. The mean age was found as 56.71 ± 44.24 months. Of these 27 patients, 25 patients (92.6%) were male and 2 patients (7.4%) were females. Right side was involved in 25 patients (92.6%) while 2 patients (7.4%) had left side involved. Per-operatively, normal appendix was found in 15 patients (55.5%), inflamed appendix in 9 patients (33.3%) and perforated appendix in 3 patients (11.1%). Operative procedures included high ligation herniotomy in 24 patients (88.9%) and high ligation herniotomy along with appendectomy in 3 patients (11.1%).

Conclusions: Treatment of AH is tailored according to presentation and most of the patients having inflamed appendix do not get complications if not excised.

Keywords: appendix; inguinal; hernia; amyand

Introduction

Inguinal hernia is one of the most common conditions encountered by the pediatric surgeon. Amyand's hernia (AH) is named after Claudius Amyand who was a British surgeon of French origin and first described this entity in 1735. It is defined as an inguinal hernia which contains a normal or inflamed appendix within its sac.^{1,2} AH is a rare variety of inguinal hernia. Its rarity is underscored by the reported incidence of an AH which is 1% of all inguinal hernias containing a normal appendix and 0.13% of all inguinal hernias containing an inflamed appendix.^{3,6} It is not possible generally to identify AH preoperatively and usually, this distinction becomes apparent during surgery.⁷ This is because there are few if any clinical findings to raise suspicion of presence of an appendix within the hernia sac. As there is a deficiency of literature readily available on this rare subject, we planned to share our 10 years experience of operating on patients with AH in the form of a case series. Our series consists of 27 cases, and is among the larger case series on the subject.

Methods

This retrospective descriptive study was conducted at Paediatric Surgery Department of Services Hospital, Lahore. In this study all the patients

having diagnosis of AH from 2007 to 2016 were included. The demographic details of all the patients including gender and age at presentation were noted. Also mode of admission, side of hernia, presenting complaint of the patients was noted. Preoperative findings including condition of appendix and procedure done in all patients were also noted. Results were analyzed by descriptive statistics using SPSS version 20.

Results

In our institute, a total of 3154 patients had undergone inguinal herniotomy over a period of 10 years. Among these 3154 patients, 59 patients undergone bilateral inguinal herniotomies, hence total herniotomies done were 3213, and 27 cases were of AH. The incidence of AH was calculated to be 0.84%. So a total of 27 patients were included in the study. The mean age of the patients was found to be 56.71 ± 44.24 months. Among these patients, only one patient (3.7%) was neonate and 6 patients (22.2%) were infants. Of these 27 patients, 25 patients (92.6%) were male while remaining 2 patients (7.4%) were females. Seventeen patients (63%) were admitted through outdoor department with simple complaint of inguinal swelling while 10 patients (37%) were admitted through emergency who presented with complaint of irreducibility. Of all these patients, 25 patients had right sided inguinal

hernia (92.6%) while 2 patients (7.4%) had left side involved. The most common complaints of the patients was found to be swelling at inguinal region and pain in 15 of 27 patients (55.55%), followed by complaint of only swelling without pain in 12 patients (44.44%) and vomiting along with swelling in 3 patients (11.11%). Per-operatively, 9 patients (33.3%) found having inflamed appendix and 3 patients (11.1%) had perforated appendix. Appendectomy was done in all those having perforated/gangrenous appendix while those having inflamed appendix were left as such. Post-operatively, all those having inflamed appendix did well and none of them got any complication. Per-operative and postoperative course of patients in

the study is summarized in **Table-1**. In none of patients during follow up, recurrence was noted. All the data of patients is summarized in **Table 2**.

Table-1: Per-operative and Post-operative course of patients in the study.

Operative and post-operative course of the patients		
Peroperative findings:	Normal appendix	15 (55.5%)
	Inflamed appendix	9 (33.3%)
	Perforated appendix	3 (11.1%)
Surgical incision	Inguinal skin crease	225 (92.5%)
	Inguinal skin crease+ laparotomy	2 (7.5)%
Wound infection	Yes	2 (7.5%)
	No	25 (92.5%)

Table-2: Per-operative and Post-operative detail of patients.

Age (in months)	Gender	Mode of presentation	Side	Presenting features	Per-operative findings	Surgery
02	Male	OPD	Left	Pain and swelling	Perforated appendix	Herniotomy & appendectomy
48	Female	OPD	Right	Swelling	Normal appendix	Herniotomy
24	Male	Emergency	Right	Pain and swelling irreducibility	Inflamed appendix	Herniotomy
120	Male	OPD	Right	Swelling	Inflamed Appendix	Herniotomy
72	Male	OPD	Right	Swelling	Normal appendix	Herniotomy
108	Male	OPD	Right	Swelling	Normal appendix	Herniotomy
144	Male	Emergency	Right	Pain and swelling irreducibility	Inflamed appendix	Herniotomy
84	Male	OPD	Right	Swelling	Inflamed appendix	Herniotomy
144	Male	OPD	Right	Swelling	Normal appendix	Herniotomy
12	Male	Emergency	Right	Pain and swelling irreducibility	Normal appendix	Herniotomy
18	Male	Emergency	Right	Pain and swelling irreducibility	Normal appendix	Herniotomy
05	Male	Emergency	Right	Pain and swelling irreducibility	Normal appendix	Herniotomy
60	Male	OPD	Right	Pain, swelling and vomiting	Normal appendix	Herniotomy
36	Male	OPD	Right	Swelling	Normal appendix	Herniotomy
02	Male	OPD	Right	Swelling	Normal appendix	Herniotomy
96	Female	Emergency	Right	Swelling, irreducibility	Normal appendix	Herniotomy
48	Male	OPD	Right	Swelling	Normal appendix	Herniotomy
106	Male	OPD	Right	Swelling	Normal appendix	Herniotomy
60	Male	OPD	Right	Pain and swelling	Normal appendix	Herniotomy
84	Male	OPD	Right	Pain and swelling	Perforated appendix	Herniotomy and appendectomy
48	Male	OPD	Right	Pain and swelling	Normal appendix	Herniotomy
72	Female	Emergency	Right	Pain and swelling, irreducibility	Normal appendix	Herniotomy
60	Male	OPD	Right	Pain and swelling	Normal appendix	Herniotomy
0.9	Male	Emergency	Right	Pain and swelling vomiting irreducibility	Perforated Appendix	Herniotomy and appendectomy
2.5	Male	Emergency	Right	Pain and swelling vomiting irreducibility	Normal appendix	Herniotomy
72	Male	OPD	Left	Swelling	Normal appendix	Herniotomy
03	Male	Emergency	Right	Pain and swelling irreducibility	Inflamed appendix	Herniotomy

56.71 months (or 4.72 years). This is markedly different from the case series from Turkey published by Cankorkmaz et al. which had a median age of just 40 days.⁹ In the case series by Cigsar et al. the mean age was 16.7 months which is closer to our study.⁸ In another smaller series by Okur et al. which had 21 patients the median age was 20.3 months.¹⁰ Therefore, the children in our series were considerably older than in other similar series.

In our series one patient was a neonate while 6 were infants. Other series include infants and neonates such as the series by Cigsar et al.,⁸ Cankorkmaz et al.⁹ and Okur et al.¹⁰ And there are a number of isolated case reports, however it is clear that these are even rarer cases and therefore have been separately mentioned in our study.

Among the patients we operated, 25 (92.6%) were male while only 2 (7.4%) were female. Analysis of various other case series in both children and adults revealed a similar predominance of male patients. A case series of adult patients by Sharma et al. had a total of 18 patients, and of those only one was female.¹¹ In the case series of Cigsar et al.⁸ and Cankorkmaz et al. [9] all patients were male. These series had 12 and 46 patients of AH respectively. The one-sided gender distribution of AH is also remarked upon in a literature review conducted by D'Alia et al.¹²

Of the 27 patients with AH we have mentioned in our series 25 (92.6%) had hernias of the right side while 2 (7.4%) had hernias of the left side. It is well known that due to the normal anatomical position of the appendix on the right side, AH most commonly occurs on the ipsilateral side. However, it can occur on the left side, but this is rare.¹³ Such an occurrence should arouse the suspicion of the surgeon and diagnoses such as malrotation and situs inversus should be considered. In the case series by Cigsar et al., only 2 had a left sided hernia, 7 had a bilateral hernia and the remaining were all right sided [8]. Similarly in the series of Kaymacki et al. out of 30 cases only 3 were left sided and they also did not encounter any case of bilateral hernia.¹⁴

We classified the presenting complaints of our patients as follows: most patients presented with

Cankorkmaz et al. had a preoperative diagnosis of incarceration or strangulation and underwent emergency appendectomy.⁹ Our findings were closer to those of Cigsar et al., in whose study only 9 patients had a preoperative diagnosis of incarcerated hernia, in the rest, the appendix was an incidental finding during elective hernia repairs.⁸ Therefore, it can be safely said that AH has a varied presentation, and it is impossible to predict its presence on clinical grounds alone.

Appendix within the sac can be normal, inflamed or perforated. We found 15 patients (70.4%) having normal or non-inflamed appendix and in 9 patients (18.5%) had inflamed appendix while only 3 patients (11.1%) had perforated appendix. In the case series by Cigsar et al, of 46 patients with AH, 33 patients had normal appendix while 9 had inflamed appendix which is comparable without results but they found only 1 patient with perforated appendix.⁸ The high incidence of perforated appendix in our series suggests a potential delay in diagnosis or presentation. This presents an opportunity for further research and possibly a clinical audit.

We performed simple herniotomy with high ligation of hernia sac in 24 patients (88.9%) while herniotomy along with appendectomy was done in 3 patients (11.1%). Various studies done at pediatric centers showed the consensus that in cases of normal appendix, herniotomy is recommended.^{11,15} The management of an inflamed appendix is debatable.^{16,17}

In a review by Galyna Ivashchuk, authors suggested that the choice of open and laparoscopic procedure and which form of herniorrhaphy to perform is matter of intense debate among surgeons.¹⁸ It is the subject of active research and appears to be guided more by the surgeon's preference than a uniform consensus. In cases of perforated appendix the procedure of choice is appendectomy either through the herniotomy incision or via a separate incision.¹⁹

We had published a case report of our department which was a case of perforated appendix in a neonate.²⁰ That case has also been included in this series. We conclude on the basis of this study that treatments of AH is tailored according to presentation and most of the patients having

inflamed appendix do not get complications if not excised. However, this does not include those having gross inflammatory signs and gangrenous appendices.

Conclusion

Treatment of AH is tailored according to

presentation and most of the patients having inflamed appendix do not get complications if not excised.

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