

# Littre hernia in children: A clinical aspect

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## ABSTRACT

**Background/Aims:** Littre hernia (LH) is difficult to distinguish from other hernias until complications arise. In this research, we present the details of diagnosis, treatment, and frequency of LH cases with differentiated clinical properties.

**Materials and Methods:** Littre hernia prevalence, clinical properties, and treatment details of cases diagnosed as incarceration/strangulation (I/S) of hernias between December 1996 and December 2017 were retrospectively investigated.

**Results:** Incarceration/strangulation was detected in 403 out of 3758 hernias within 21 years. Four cases were detected as LH (0.09%) in 403 I/S patients. Partly reduced 2 cases were treated by resection/anastomosis with the abdominal approach.

**Conclusion:** The possibility of LH in strangulated or partly reduced hernias should be considered. The abdominal approach may be necessary in nonreducible hernia with possible LH patients.

**Keywords:** Littre hernia, Meckel's diverticulum, strangulation, children

## INTRODUCTION

Meckel's diverticulum (MD) is a congenital abnormality of the gastrointestinal tract. The incidence of MD in the community differs between 0.5%-4.5% (1,2). A diverticulum was defined by Friedrich Meckel in 1841, and hence, it is mentioned with his name. It is a real diverticulum (mucosa, submucosa, muscular layer, serosa), and it is generally asymptomatic. It may contain gastric and pancreatic ectopic mucosa that may cause hemorrhage and perforation (3). Littre hernia (LH) is a rare complication of the diverticula, and it is observed in less than 1% of MD cases. LH is reported with a rate of 12%-30% in umbilical hernia, 19%-30% in femoral hernia, and 50% in inguinal hernia. It is also stated that LH is mostly located on the right side of the inguinal hernia (4,5). In this research, we aim to present the prevalence of LH in our work and to present child LH cases with different clinical properties.

## MATERIALS AND METHODS

We retrospectively analyzed the records of patients diagnosed and treated as hernia between December 1996 and December 2017. Incarcerated/Strangulated (I/S) hernias located in the inguinal or umbilical region were recorded. LH patients were also defined among the I/S patients. All the patients were evaluated with respect to age, gender, complaint, physical examination findings, radiological diagnoses, hernia type, treatment methods, hospitalization interval, and complications. The study protocol was approved by the Ethics Committee of Firat

University School of Medicine (Approval Date: November 30, 2017; Decision No.: 03).

## RESULTS

The data from 3758 patients (male/female ratio: 3221/537) operated surgically for hernia were analyzed in the 21-year period. Here, 3371 patients (90%) were diagnosed as having inguinal hernia and 387 (10%), umbilical hernia. Further, 403 of the inguinal hernia cases (10.7%) were diagnosed as I/S. I/S was not detected in umbilical hernias. Four of the I/S patients (0.09%) were diagnosed as having LH. All the LH patients were consulted into the emergency room (ER). Their average age was 18 months (range: 1 month to 4.5 years). The common complaints were inguinal swelling, anxiousness, and vomiting. I/S inguinal hernia was detected in the physical examination. Hernia reduction was partially performed in three male I/S cases in the ER and also under anesthesia in the operating theater. A reduction in the female case was unsuccessful. Three partially reduced cases were detected to have a fibrotic band in the diverticulum and hernia sac. Abdominal distention was observed in two cases. While a transverse surgical inguinal incision was preferred in two cases, the other two cases were preferred to be treated with laparotomy with a paramedian incision (Figure 1). Ileal resection/anastomosis was performed together with MD in three cases. In one case, MD was incidentally detected and only an MD wedge resection was sufficient for recovery. Hernia repair of two abdomen-incision cas-

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es was performed inside the abdomen; two other cases were repaired with the inguinal approach. The average hospitalization interval was 8.2 days (2-16 days). A wound infection was observed in one case (Table 1).

## DISCUSSION

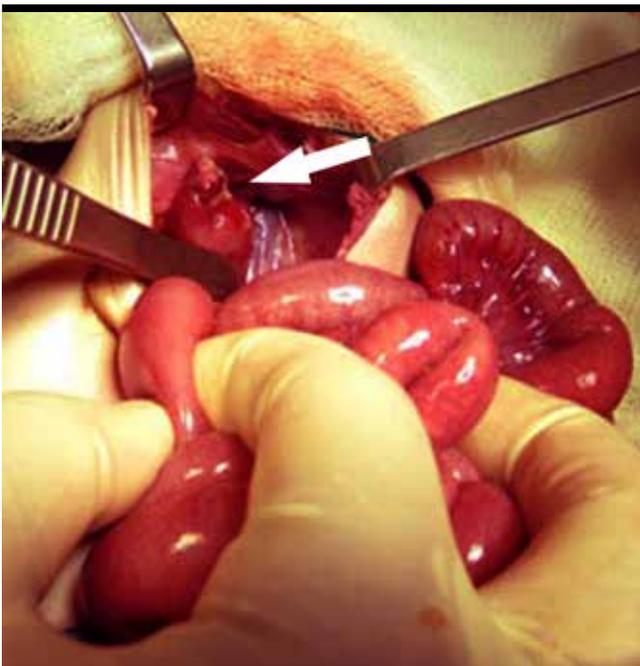
Meckel's diverticulum occurs as a result of the inability to obliterate the omphalomesenteric channel in the fifth week of fetal development, and it is generally diagnosed with a complication (1). Clinical findings frequently occur as hemorrhage, perforation, inflammation, and obstruction. It is rarely diagnosed as LH (0.05%-1%) (2,6). The incidence of LH was detected as 0.09% in this research.

Kline stated that LH is rarely observed during childhood (7). In addition, LH occurring without any complications is rare. LH is more commonly observed in boys, and it is observed more commonly during childhood, contrary to Kline (8). In our research, three cases were boys and they were within the age range in which I/S is more commonly observed. We also think that small male children have the tendency to LH. LH is the most frequently defined within inguinal hernia (2). In our research, one patient was defined as having a left inguinal hernia and the remaining three patients were defined as having a right inguinal hernia. One case was diagnosed during hernia

repair without showing any complications. Although the clinical, pathological, and radiological properties of complicated MD are well known, it is very difficult to determine a companion of MD for obtaining a clinical perspective during the preoperative term and to discriminate it from other I/S hernia types. All of these cases have similar symptoms and complaints as I/S inguinal hernias, such as vomiting, anxiousness, and swelling in the groin region. Barium-contrasted investigations, ultrasonography, angiography, computerized tomography, and scintigraphy assist in their diagnosis (9,10). Ultrasonography can only define ulceration or general inflammation. It may not define other properties (11). As three of our patients were operated upon immediately, the hernia sac inside the bowel was defined using ultrasonography, but the overall LH definition was not performed. As mentioned in the literature, any of the cases could be preoperatively defined.

In complicated LH, MD shows inflammation inside the hernia sac with strangulation or with ulceration of the gastric mucosa, and it cannot be reduced with the adherence of a fibrotic band or self-adherence (12). The reduction was completely unsuccessfully in one of the cases in our research. Three partially reduced cases were detected to have a fibrotic band among the diverticulum and hernia sac. A known treatment approach of LH is the "wedge resection" of the diverticulum. However, in complicated LH cases, ileal resection-anastomosis should be performed in the presence of fibrosis, ulceration, or heterotopic tissue with ileal resection and anastomosis (2,8). Surgery started with an inguinal incision in one case, but as the incised part with exploration diverticulum could not be reduced on the internal and external ring levels, it was reduced with laparotomy inside the abdomen. We approached the second I/S case directly with laparotomy as it had the same examination properties on the basis of our previous experience. In this research, ileum resection with diverticulum excision was performed in 3 LH patients. A wedge-type diverticulum excision was made in the hernia sac in an uncomplicated case.

Hernia repair is performed with an inguinal transverse incision (6). We performed the inguinal hernia repair with an inguinal transverse incision in only two cases in our research. Intra-abdominal hernia repair was performed in two complicated LH cases that were previously treated with laparotomy. We assume that intra-abdominal repair in order to prevent repetitions and other complications is more appropriate as the hernia sac is highly edematous and fragile.



**Figure 1.** While a transverse surgical inguinal incision was preferred in two cases, the other two cases were preferred to be treated with laparotomy with a paramedian incision

**Table 1.** Properties of the Littre hernia cases

	Case 1	Case 2	Case 3	Case 4
Gender	M	F	M	M
Age (month)	2	15	54	1
Complaints	Swelling in both groin, vomiting, fever, anxiousness	Swelling in left groin, vomiting	Swelling in right groin, vomiting	Swelling in right groin, anxiousness
Physical examination findings	Bilateral inguinal hernia, incarceration Decrease in bowel sounds, abdominal distention	Left inguinal strangulated hernia, decrease in bowel sounds, abdominal distention	Swelling in right inguinal	Right incarcerated inguinal hernia, left hydrocele
Scrotal adherence	+	-	+	+
Reduction	Partly	Unsuccessful	Partly	Partly
Intestinal obstruction in abdominal radiography	+	+	-	+
Ultrasonography	Right inguinal strangulation of hernia	Right inguinal strangulation of hernia	-	Right inguinal strangulation of hernia
Incision-Resection	Perforated Meckel diverticulum and ileum resection at 30 cm above the caecum with right paramedian incision	Perforated Meckel diverticulum resection and abscess drainage with left inguinal transverse and left paramedian incision	Meckel diverticulum resection with right inguinal transverse incision	Meckel diverticulum and ileum resection
Hernia repair	Bilateral abdominal approach	Abdominal approach	Inguinal approach	Repair from inguinal area
Pathological diagnosis	with granulomatous inflammation necrotic Meckel diverticulum	Necrotic and perforated Meckel diverticulum	Meckel diverticulum	with granulomatous inflammation necrotic Meckel diverticulum
Hospitalising period (days)	11	16	2	5
Complications	-	Wound infection	-	-
Follow-up period (years)	5	6	7	12

M: male; F: female

A limitation of this study is that the number of LH patients is low.

In conclusion, it may not be possible to define LH before the operation. Surgeons should consider LH in the differential diagnosis in unreducible I/S hernias. Ileal resection-anastomosis should be added to the treatment in complicated cases. Performing intra-abdominal hernia surgery may prevent complications in cases executed using laparotomy.

**Ethics Committee Approval:** Ethics committee approval was received for this study from the Ethics Committee of Firat University School of Medicine (Approval Date: November 30, 2017; Decision No.: 03).

**Informed Consent:** Written informed consent was obtained from the patients who participated in this study.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept - Ü.B.; Design - T.T.; Supervision - A.K.; Resources - Ü.B., M.S.; Materials - Ü.B., T.T.; Data Collection and/or Processing - T.T., M.S.; Analysis and/or Interpretation - Ü.B., A.K.; Literature Search - Ü.B., T.T.; Writing Manuscript - Ü.B., T.T.; Critical Reviews - A.K., M.S.

**Conflict of Interest:** The authors have no conflict of interest to declare.

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