Meckel's diverticulum in a strangulated femoral hernia.

Case report and review of literature

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Meckel's diverticulum is the most common congenital abnormality of the gastrointestinal tract. In the vast majority of cases it remains asymptomatic throughout life but in about 5% of cases it gives rise to complications, namely, haemorrhage, intestinal obstruction and inflammation. A rare complication is being presented – a femoral hernia containing a strangulated Meckel's diverticulum. This is known as Littre's hernia, which often exhibits subtle variations from the norm in its presentation. Preoperative diagnosis of Littre's hernia containing Meckel's diverticulum is rather difficult; almost always, the strangulated diverticulum is first discovered during operation. The diverticulum was resected and the femoral canal closed by a polypropylene mesh plug. The patient underwent an uneventful recovery and was discharged home on the fourth postoperative day. Complications arising from Meckel's diverticulum usually occur at a young age, with the ectopic tissue present in the diverticulum frequently being the cause of the symptoms. Criteria for the resection of Meckel's diverticulum found incidentally at laparotomy have been suggested.

KEY WORDS: Complications, Femoral hernia, Meckel's diverticulum.

Introduction

Meckel's diverticulum is a true diverticulum of the small intestine containing all three layers of the bowel. It is found approximately 50 cm from the ileocaecal valve (range 8 – 120cm) [1]. It is formed by the failure of the omphalomesenteric duct to obliterate at the fifth week of gestation and is the commonest congenital abnormality of the gastrointestinal tract to be encountered. The reported prevalence of Meckel's diverticulum varies from 0.14% to 4.5% [2-5] being commoner in males than in females.

It was first described by Wilhelm Fabricius Hildanus in 1598 but owes its name to Johann Friederich Meckel who studied its embryological association in 1809 [6].

Case Report

A 60 year old male was admitted with a complaint of an increasingly painful lump in the right groin which appeared suddenly after jumping from a height of about 1.5 metres, 3 days earlier. He did not complain of abdominal pain and had no nausea or vomiting. His bowel habits were normal and he was still passing flatus on admission to the Emergency Department. He had undergone left inguinal herniorraphy several years previously.

On examination, he was apyrexial and his pulse rate was normal. The abdomen was soft and not tender but a swelling of the right inguinal region with overlying erythematous skin was evident. The lump was markedly tender on palpation, irreducible and not pulsatile. Bowel sounds were normal.

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The leucocyte count was found to be raised at 14.10 x 10^9/L with a neutrophilia of 8.88 x 10 ^{9}/L. A plain supine abdominal x-ray was unremarkable.
A diagnosis of strangulated femoral hernia was reached, and urgent surgery advised.
Through an inguinal approach, a right femoral hernia was confirmed. The sac was mobilised and opened. A strangulated Meckel's diverticulum 3 cm long with a wide base of about 2 cm was found in the sac. This was excised and the antimesenteric border of the ileum closed by a stapling device. The femoral hernia was routinely repaired using polypropylene mesh plug.
Antibiotic therapy was instituted for 5 days. The patient opened bowels on the second postoperative day and was discharged home on the fourth postoperative day.
Histological examination of the specimen showed complete intestine with mucosa, submucosa and muscularis propria. Signs of early haemorrhagic infarction were present. No ectopic tissue was found.

Discussion

Although initially described by Alexis Littre' in 1700 [7] from whom this type of hernia gained its name, incarceration of Meckel's diverticulum in a hernial sac remains a rare event. Meckel's diverticulum is recognised by its location in the antimesenteric border of the ileum and one must therefore be careful not to confuse Littre's hernia with a Richter hernia, in which only a portion of the circumference of bowel is involved [8].
In many reviews [1,9-11,17] with relatively small numbers of patients, incarceration of Meckel's diverticulum in a hernial sac is not encountered. Only in the largest series [3] which reviewed 1476 patients over a 52 year period were 2 cases of hernial incarceration of a Meckel's diverticulum described.
As in this case, the diagnosis of hernial incarceration of a Meckel's diverticulum is nearly always made at operation [2,8,12] partly because the diagnosis of Meckel's diverticulum is not easy, but also because the clinical picture as seen in the patient necessitated surgery. However, some of the clinical features in this patient may be explained in retrospect-although the patient complained of localised pain in the groin, he did not suffer from abdominal pain; there were no symptoms or radiological signs of intestinal obstruction, namely, abdominal distension, nausea or vomiting and clinical signs of peritonitis were absent. This clinical picture is borne out by other documented cases [12-15].
Most Meckel's diverticula remain asymptomatic and are discovered incidentally at operation or at autopsy. The lifetime risk of complications from Meckel's diverticulum is low [4,9,16] and is estimated to vary between 4% and 6.4%. Complications from Meckel's diverticulum usually develop either in the paediatric age group or in early adulthood [10] with the mean age at presentation being 31 years [3]. The frequency of symptomatic Meckel's diverticulum decreases with age. The clinical presentation of Meckel's diverticulum is due to bleeding, obstruction including intussusception, and diverticulitis in decreasing order of frequency. These comprise more than 99% of cases [1,9,17]. Not surprisingly, in the vast majority of patients with symptomatic Meckel's diverticulum ectopic mucosa was found in sharp contrast to those resected for asymptomatic Meckel's diverticulum [1-3,10]. This 60 year old male patient had not complained of symptoms originating from Meckel's diverticulum before. Indeed, no ectopic mucosa was found on histological examination.

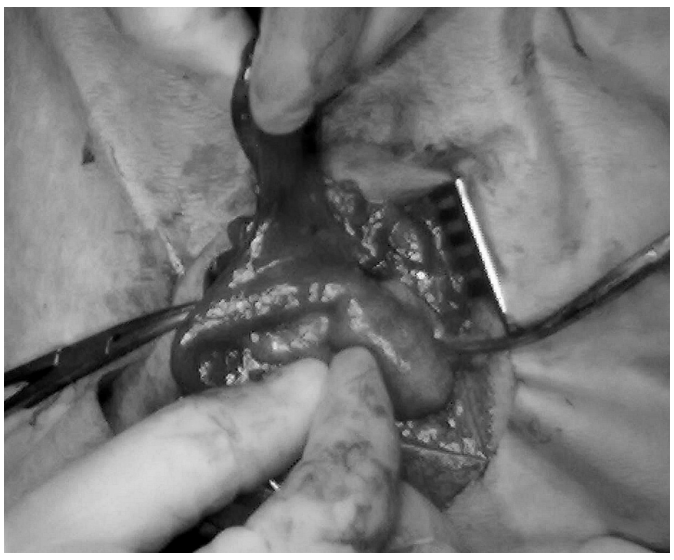

Fig. 1: Meckel's diverticulum delivered through hernial sac.

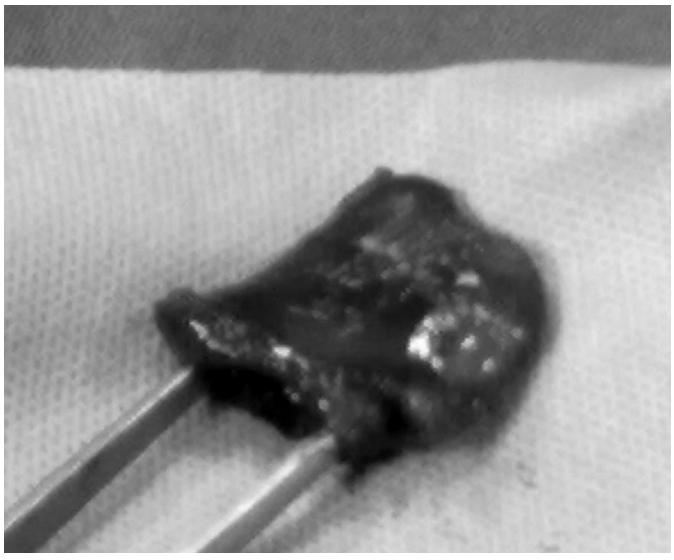

Fig. 2: The resected diverticulum.

Whether or not Meckel's diverticulum should be excised when discovered at laparotomy had been the subject of controversy for several years. Post-operative morbidity and mortality arising from Meckel's diverticulectomy in asymptomatic individuals is very low [1-4,9,11,19]. Some authors advocate the resection of a Meckel's diverticulum found incidentally [1,2,9,19], while others strongly oppose the idea claiming that the chance of symptoms arising from Meckel's diverticulum decreases significantly with age and therefore resection is not justified [16]. Perhaps a more practical approach to be adopted is to remove diverticula that demonstrate at least one feature that increases the risk of future complications, namely, male sex, age below 50 years, diverticulum length above 2 cm, presence of ectopic tissue, and a diverticular band [3,10,20,21].

In conclusion, incarceration of Meckel's diverticulum in a femoral hernia is rare, is difficult to diagnose preoperatively and may exhibit a subtle presentation. The diagnosis of Meckel's diverticulum itself is a challenging one. It is therefore important to keep in mind the possibility of clinical features arising from Meckel's diverticulum whenever examining a patient with an acute abdomen.

Riassunto

Il diverticolo di Meckel è l'anomalia congenita del tratto gastrointestinale che s'incontra più frequentemente. Nella maggior parte dei casi rimane asintomatico ma in circa 5% dei casi si manifestano delle complicanze: perdita di sangue, ostruzioni dell' intestino ed infiammazioni. Presentiamo una complicanza rara, cioè, lo strangolamento del diverticolo in un'ernia femorale, la cosidetta ernia di Littre, il cui quadro clinico spesso mostra delle variazioni sottili. La diagnosi del diverticolo di Meckel in questi casi si dimostra assai difficile, e viene fatta quasi sempre soltanto durante l'intervento. Il diverticolo è stato asportato e l'ernia riparata con una protesi di polipropilene. Il postoperatorio è decorso senza complicazioni ed il paziente dimesso al quarto giorno. Nella maggioranza dei casi le complicanze derivanti dal diverticolo di Meckel si manifestano in giovane età; spesso il tessuto eterotopico presente nel diverticolo dà origine alla sintomatologia. Si consiglia l'adozione dei criteri per la rimozione dei diverticoli riscontrati casualmente.

References

1) Crandall R, Hirst AE Jr: *Meckel's diverticulum: Its clinical significance.* Calif Med, 87(4):252-55.

2) Ludtke FE, Mende V, Kohler H, Lepsein G: *Incidence and frequency of complications and management of Meckel's diverticulum.* Surg Gynecol Obstet, 1989; 169:537-42.

3) Park JJ, Wolff BG, Tollefson MK, Walsh EE, Larson DR: *Meckel diverticulum: the Mayo Clinic experience with 1476 patients (1950-2002).* Ann Surg, 2005; 241(13):529-33.

4) DiGiacomo JC, Cottone FJ: *Surgical treatment of Meckel's diverticulum.* South Med J, 1993; 86(6):671-75.

5) DeBartolo HM Jr, van Heerden JA: *Meckel's diverticulum.* Ann Surg, 1976; 183:30-33.

6) Meckel JF: *Hanbuch der Pathologischen Anatomie.* Vol 1 Leipzig, Germany: Reclam, 1812.

7) Littre A: *Observation sur une nouvelle espèce de hernia.* Acad Royal Sci, 1700; 2:300.

8) Trupo FJ, Aburahma A: *Meckel's diverticulum in a femoral hernia: A Littre's hernia.* South Med J, 1987; 80(5):655-56.

9) Cullen JJ, Kelly KA, Moir CR, Hodge DO, Zinsmeister AR, Melton LJ III: *Surgical management of Meckel's diverticulum.* Ann Surg 220(4):564-69.

10) Bemelman WA, Hugenholtz E, Heij HA, Wiersma PA, Obertop H: *Meckel's diverticulum in Amsterdam: experience in 136 patients.* World J Surg, 1995; 19:734-36.

11) Diamond T, Russell CF: *Meckel's diverticulum in the adult.* Br J Surg, 1985; 72(6):480-82.

12) Mirza MS: *Incarcerated Littre's femoral hernia.* J Ayub Med Coll Abbottabad, 2007; 19(2):60-61.

13) Page AM, Collins JN, Britt LD: *An incarcerated femoral hernia containing a Meckel's diverticulum.* Am Surg, 75(3):260-61.

14) Perlman JA, Hoover HC, Safer PK: *Femoral hernia with strangulated Meckel's diverticulum (Littre's hernia).* Am J Surg, 1980; 139:286-89.

15) Baum RK, Olch IY: *Meckel's diverticulum incarcerated in a femoral hernia.* Calif Med, 88(5):386-88.

16) Leijonmarck CE, Bonman-Sandelin K, Frisell J, Räf L: *Meckel's diverticulum in the adult.* Br J Surg, 1986; 73(2):146-19.

17) D. Alan Aubrey: *Meckel's diverticulum: A Review of Sixty-Six Emergency Meckel's Diverticulectomies.* AMA Arch Surg, 1970; 100(2):144-46.

18) Yamaguchi M, Takeuchi S, Awazu S: *Meckel's diverticulum. Investigation of 600 patients in Japanese literature.* Am J Surg, 1978; 136(2):247-49.

19) Matsagas M, Fatouros M, Koulouras B, Giannoukas AD: *Incidence, complications, and management of Meckel's diverticulum.* Arch Surg, 1995; 130(2):143-46.

20) Robijn J, Sebrechts E, Miserez M: *Management of incidentally found Meckel's diverticulum. A new approach: Resection based on a risk score.* Arch Chir Belg, 2006, 106:467-70.

21) Mackey WC, Dineen P: *A fifty year experience with Meckel's diverticulum.* Surg Gynecol Obstet, 1983; 156(1):56-64.