

Urachal Cyst Presenting as Incarcerated Umbilical Hernia: Case Report

Al-Qadhi H^{1*}, AL Sharqi A² and Al Abri M³

¹Department of Surgery, Senior consultant, Trauma surgeon,, Sultan Qaboos University Hospital, Muscat, Oman

²Department of Surgery, Intern Doctor, Sultan Qaboos University Hospital, Muscat, Oman

³Department of Surgery, Surgical resident, Oman medical specialty Board, Muscat, Oman

*Corresponding author:

Hani Al-Qadhi,
Department of Surgery, Senior consultant,
Trauma surgeon,
Sultan Qaboos University Hospital,
Muscat, Oman,
E-Mail: ali.sharqi95@gmail.com

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1. Abstract

An umbilical hernia is a protrusion of an intra-abdominal organ fully or part of it from an umbilical opening. As the bladder descends into the fetal pelvis, the urachal canal normally obliterates and forms the median umbilical ligament. When this process fails, four different embryological abnormalities can result. Most of these abnormalities present in early years of life.

Here in we are presenting a case report about a 32 year old female who presented with painful abdominal mass which turned out to be an incarcerated umbilical hernia containing a urachal cyst. The diagnosis of this condition is difficult and may remain presumptive until clearly confirmed by imaging and surgical finding.

2. Introduction

An umbilical hernia is a protrusion of an intra-abdominal organ fully or part of it from an umbilical opening [1, 2]. In adults, the umbilical hernia is usually acquired which is defined as a defect from 3cm above to 3cm below the umbilicus [3, 4]. As reported in the literature, the incidence of umbilical hernia is reaching 10-25% of all types of hernia [5]. There are many risk factors that increase the chance of developing hernia in general this includes chronic cough, pregnancy, obesity, constipation and heavy weight lifting [1, 4]. The abdominal wall at the level of the umbilicus is connected to the bladder during embryonic period by the urachus which is derived from the embryonic allantois [6, 7]. As the bladder descends into the fetal pelvis, the urachal canal normally obliterates and forms the median umbilical ligament [6-9]. When this process fails, four different embryological abnormalities can result: umbil-

ical-urachal sinus, patent urachus, urachal cyst or vesicourachal diverticulum [8, 10]. Most of these abnormalities present in early years of life. Hence, abnormalities can present in adults but it is rare. Urachus cyst is the most common reported abnormality among them [11, 12].

Herein we are presenting a case report about a urachal cyst presenting as incarcerated umbilical hernia.

3. Case Presentation

A 32 year old female presented to an emergency department of a Sultan Qaboos University Hospital, tertiary hospital in Sultanate of Oman complaining of one month history of painful abdominal mass protruding through umbilicus. Her pain was progressive in the last week before presentation and she was unable to reduce the mass inside her abdomen. She denied nausea, vomiting or fever. She also denied any history of chronic constipation, cough, or heavy weight lifting. She delivered a healthy child 6 weeks prior to the presentation. Her past medical history is significant for renal colic which was treated conservatively. No previous surgeries, not on any medication and does not have any allergies.

Physical examination revealed a middle aged female in mild pain, but not in distress. Her hemodynamics were within normal limits (Pulse of 89 beats/minute, blood pressure of 118/57, temperature of 37.1 °C, respiratory rate of 18 breaths/minute, SpO2 of 99% at room air).

Abdomen was not distended, soft, erythematous, firm, tender and irreducible umbilical hernia. Defect was felt with hard content. Cough impulse was positive. There was an underlying mass that

was felt in the umbilical area, which is smooth, with regular borders. No rectus diastasis and other hernial orifices were intact. Rest of the examination was unremarkable.

Laboratory investigations were within normal range; no leukocytosis or hyperlactatemia. Abdominal Computed Tomography (CT) scan with intravenous and Oral contrast showed a cystic mass in the umbilical region which is herniating to the umbilical defect anteriorly with a suspicious adherence to the adjacent bowel loops (Figure 1 and Figure 2).

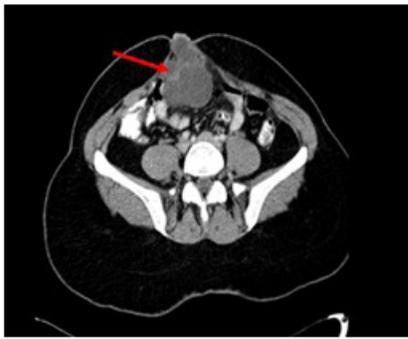


Figure 1

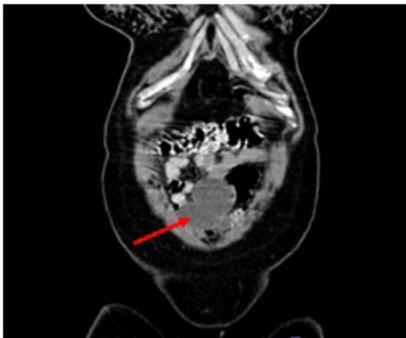


Figure 2

Given the patient presentation with conjunction of CT findings, the main differential diagnosis was incarcerated umbilical hernia containing urachal cyst.

In regard to this diagnosis, the patient was taken for diagnostic laparoscopy. Intraoperative findings were: multilobulated urachal cyst and an umbilical defect with a cystic lesion herniating through it (Figure 3 and Figure 4). The cyst was dissected from the omental attachment and abdominal wall. The urachus was traced back to the bladder and dissected then ligated using an endo loop. The cyst was delivered by an endo bag through one of the port sites. Umbilical hernia repair was carried out through supraumbilical incision using Mayo's vest over pants repair. Hernial sac including the cyst was sent to pathology, which later reported as simple urachal cyst. The patient was doing well in the postoperative period and was discharged home on postoperative day one. She was seen in the out-patient clinic two weeks after her discharge and was symptoms free.

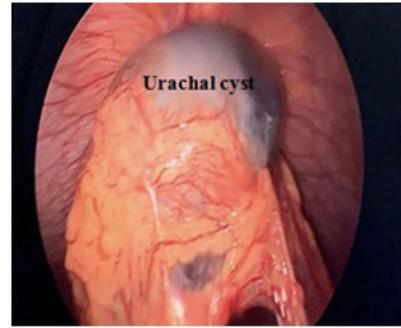


Figure 3

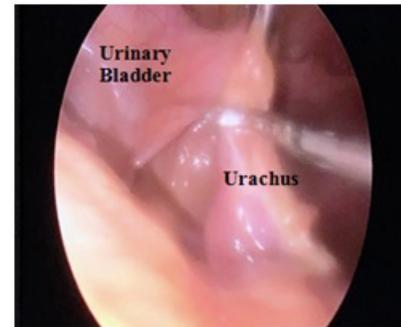


Figure 4

4. Discussion

Umbilical hernia is a common problem encountered in surgical out-patient departments. The content of the hernia in the majority of cases is omentum, preperitoneal fat tissue, omentum, and small intestine [13]. However, the findings on clinical examination of this patient were suspicious which directed us to do Computed tomography (CT) scan despite that the diagnosis of the hernia is carried out clinically. As the patient had erythematous, firm, tender and irreducible umbilical hernia containing hard mass and her CT showed cystic mass in the umbilical region, the main differential diagnosis was incarcerated umbilical hernia containing urachal cyst. The association of urachal cyst and hernia is rare and can pose diagnostic dilemmas as it was discussed by Gregory G et al [14]. Previous studies showed that the presentation of urachal cyst varies from case to case but the commonest presentation is drainage followed by pain, mass, erythema and dysuria [15-18].

Making the diagnosis of urachal cyst based on clinical diagnosis is difficult and the diagnosis may remain presumptive until clearly confirmed by imaging and surgical finding. Yiee et al suggested a diagnostic algorithm for urachal abnormalities. In the suggested algorithm, Ultrasound was good as initial diagnostic modality and showed diagnostic sensitivity of 82% where as CT scan is useful where the diagnosis is unclear or planning for surgery with sensitivity of 71% [17].

The treatment of this patient was carried out by laparoscopic approach. As it was previously mentioned the cyst was completely excised with urachal remnant until the dome of the bladder. By reviewing the literature, the suggested management of urachal

remnant in adults is requiring a surgical approach with complete resection of the urachal remnant up to the bladder dome [19-20]. In contrast to children, conservative management is advocated for those who are under the age of 1 year as complete resolution was observed in this age [21-22]. Incomplete resection of the remnant carries risk of recurrence and potential for malignant transformation [20]. However, the extent of resection is still debatable. For complete resolution of symptoms, En bloc resection of umbilicus followed by umbilicoplasty was described as the best method for this purpose [20, 23, 24]. There is no clear agreement or evidence in regard to the routine resection of the urachal remnant En bloc with a cuff of the bladder. Some studies revealed that to avoid recurrence and possible occurrence of carcinoma in residual tissue of urachus, excision of bladder cuff is necessary [25-26]. On the other hand, other studies suggested that the excision of bladder cuff is only appropriate when there is attachment of the cyst to the dome of the bladder [23, 24, 28].

5. Conclusion

Urachal anomalies in adults are rare and rarest when it is associated with umbilical hernia. So the diagnosis needs to be kept in mind. The diagnosis of this condition clinically is difficult and may remain presumptive until clearly confirmed by imaging and surgical finding. US remains the diagnostic modality for this condition and the suggested management of urachal remnant in adults is requiring a surgical approach with complete resection of the urachal remnant up to the bladder dome.

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