Coc Cer Derg/Turkish J Ped Surg 2023;37(2): 75-78
doi: 10.29228/JTAPS.66601

Case Report

Çocuk Cerrahisi Dergisi
Turkish Journal of Pediatric Surgery
Volum 37
Number 2
2023

A Rare Complication of Vesicoamniotic Shunt Dislodgement in a Newborn With Fetal Obstructive Uropathy; Protruding Mesenteric Mass

Bilge Türedi Sezer[1], Mehmet Uğur Yılmaz[1], Fatih Çelik[2], Mehmet Emin Balkan[1], Nizamettin Kılıç[1]

[1]Uludag University School of Medicine, Department of Pediatric Surgery, Division of Pediatric Urology, Bursa -TÜRKİYE

[2]Uludag University School of Medicine, Department of Pediatric Surgery, Bursa -TÜRKİYE

ABSTRACT

Posterior urethral valve is the most frequently seen congenital obstructive uropathy in male neonates with antenatal hydronephrosis. We aim to present a rare complication of antenatal vesicoamniotic shunt (VAS) dislodgement in a male neonate with antenatal bilateral hydroureteronephrosis and megacystitis.

Thirty three weeks-old male neonate who has been followed for antenatal bilateral hydronephrosis and olygohydramniosis, delivered by an urgent cesarean section at 33 weeks due to anhydramniosis. He had a history of vesicoamniotic shunt placement at 27th week of gestation for prenatal diagnosis of obstructive uropathy. A protruding abdominal mass was detected after birth and urgent laparotomy was performed.

Vesicoamniotic shunting is preferred to protect upper urinary tract from effects of bladder outlet obstruction and help respiratory development. The method has some probable maternal and fetal complications. It should be kept in mind that abdominal organ prolapse can be seen with dislocation of shunt and patient may need a laparotomy soon after birth.

Keywords: Antenatal hydroureteronephrosis, Dislocation, Vesicoamniotic shunt

Received : 25.11.2022
Accepted : 03.05.2023
Published Date: 01.08.2023

Cite as: Sezer BT, Yılmaz MU, Çelik F, Balkan ME, Kılıç N. A rare complication of vesicoamniotic shunt dislodgement in a newborn with fetal obstructive uropathy; protruding mesenteric mass. Coc Cer Derg/Turkish J Ped Surg 2023;37(2): 75-. doi: 10.29228/JTAPS.66601

Bilge Türedi Sezer
Konya Şehir Hastanesi, Çocuk Ürolojisi Kliniği,
Konya-TÜRKİYE
blgtrd@gmail.com
ORCID: 0000-0003-3532-0912

Mehmet Uğur Yılmaz
0000-0003-2468-1333
Fatih Çelik
0000-0002-7960-4477
Mehmet Emin Balkan
0000-0002-4845-9916
Nizamettin Kılıç
0000-0003-2931-1227

Introduction

Congenital obstructive uropathies are responsible for chronic renal failure in children[1]. Severe pulmonary hypoplasia can occur secondary to oligohydramniosis due to urinary tract obstruction. In utero treatment is getting popular to protect the fetus from these severe complications. Although antenatal intervention can be successful in selected patients, it has potential risks which increase maternal and fetal morbidity and mortality. Vesicoamniotic shunting is mostly preferred method of antenatal intervention in selected patients when posterior urethral valve (PUV) is suspected with antenatal ultrasonographic findings. A pig tail stent is placed between fetal bladder and amniotic cavity via percutaneous technique under ultrasonographic guidance to by-pass the urinary tract obstruction to avoid the possible severe renal and pulmonary complications [2].

Case presentation

A 33 weeks-old male newborn from 30 years-old mother who had history of antenatal bilateral hydronephrosis was delivered urgently with cesarean section because of anhydramniosis. Oligohydramniosis, bilateral hydronephrosis and a large bladder with thick walls were detected on antenatal ultrasonographies and at 27th week of gestation, VAS was placed with the pre-diagnosis of posterior urethral valve and the shunt was dislocated after 14 days. Shunt was found outside on the back of the baby at the urgent delivery. And a 3 x 5 cm tubular blind-ending mucosal mass was protruding out of an abdominal wall defect at left lower quadrant was recognized in first examination. Urethra was catheterized with 6 fr feeding tube and urine flow was seen. The mass was covered with wet gauzes to avoid harm. On postnatal third day ultrasonography revealed bilateral grade 4 hydronephrosis, decreased renal parenchymal thickness and increased bladder wall thickness. Voiding cystourethrography showed dilated ureters, bilateral high grade vesicoureteral reflux (VUR) and 'keyhole sign' of posterior urethra. Cystoscopy was performed and bladder trabeculation and type 1 PUV were detected. After valve ablation, urethral foley catheter was placed. For exploration of the protruding mass, abdominal wall defect was lengthened transversely with an 1 cm length incision. Colonic segment and its mesenteric tissue was seen with pulling the mass. Blind-ending, tubular mucosal mass was seen to be originated from transverse colonic mesentery and it was not in relation with the intestinal lumen. After careful dissection from mesenteric tissue, the mesenteric defect was repaired primarily.

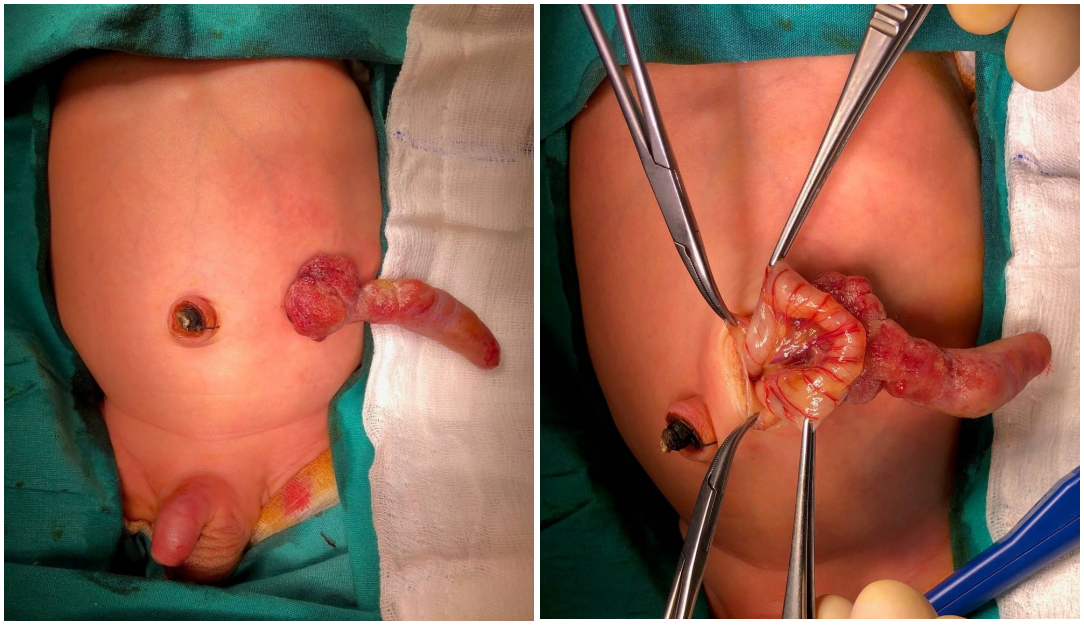

Figure 1. A) Intraoperative view of the protruding tubular mass B) Transverse colonic mesenteric tissue that mass was originated from

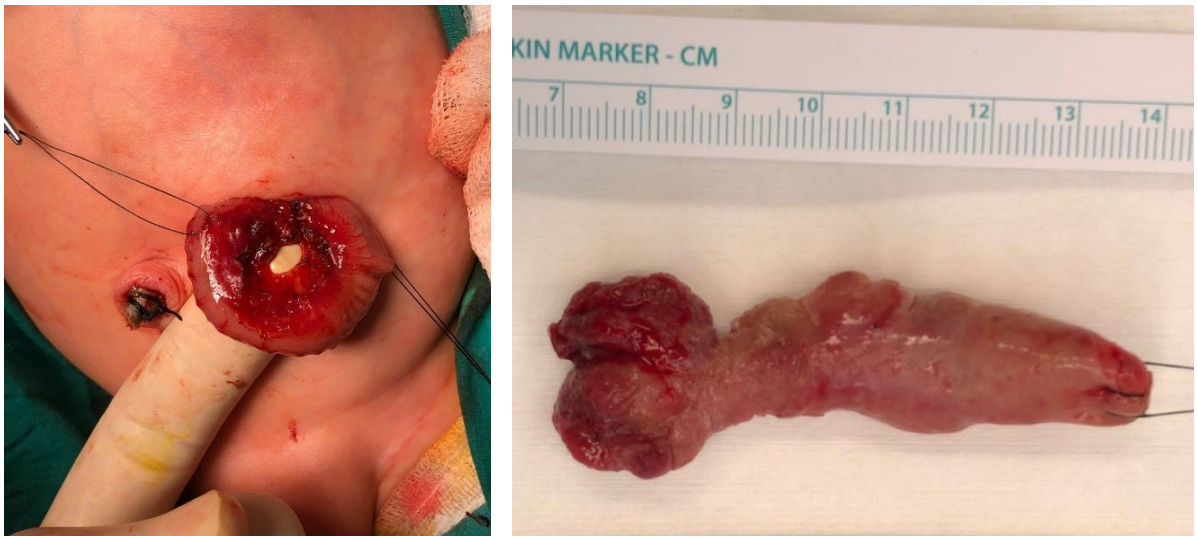

Figure 2 . A) Mesenteric defect after dissection B) Macroscopic view of specimen excised

Pathologic examination is compatible with edematous omental tissue with some fibrotic areas. There were no intraoperative or postoperative complications. The baby did well postoperatively and is still followed for posterior urethral valve bladder and upper urinary tracts.

Discussion

Congenital obstructive uropathies are responsible for chronic renal failure in children[1]. Oligohydramniosis secondary to urinary obstruction results in severe pulmonary complications1. Antenatal intervention may provide normal pulmonary development in very selected patients[2]. Despite the potential maternal and fetal risks, in utero treatment can be performed successfully in some selected patients.

Vesicoamniotic shunting is mostly preferred one of the in utero treatment options to prevent the severe chronic renal effects of urinary obstruction and to improve respiratory development in selected cases. Preterm labor or preterm rupture of membranes are reported potential risks of the technique[3]. Robichaux et al. presented the first case with abdominal wall defect as a complication of VAS placement in 19914. Two mechanisms were thought to be responsible for this complication in their report. One is entangling of fetal intestines and mesentery by shunt and pulling through the abdominal wall if the shunt got dislocated. The second theory is increase in abdominal pressure by persistent urinary tract dilatation results in bowel herniation[4]. Lewis et al. presented a case with abdominal wall defect due to VAS dislodgement. They reported that vesicoamniotic shunting is still a prefferable option in very selected patients to decrease neonatal morbidity[5].

Antenatal shunt dislocation may result in fetal abdominal wall defect and this may be presented as a protruding abdominal mass. It can drag away any intraabdominal tissues out of the abdominal defect and present with a protruding abdominal mass at delivery. Placement of shunt is reported cause of abdominal wall defect and hernia formation in recent studies. Supraumbilical placement of the shunt leads to early dislodgement and increase in intra abdominal pressure due to re-dilatation of bladder causes the bowel herniation. Gehring et al. reported that placing below the umbilicus may potentially decrease the risk of bowel herniation in case the shunt dislocation occurs [6,7]. In another case report from Springer et al. in 2010, VAS dislocated and completely incorporated into the bladder[8]. Because of the significantly increasing ascites and fetal respiratory distress, urgent delivery was made and after stabilisation of the neonate, laparotomy was performed and bladder perforation was found. This is one of the major complications of in utero VAS dislocation reported in the literature.

To our knowledge our case is the first to have a protruding mass originated from colonic mesentery with pathologic examination of omental tissue due to VAS dislocation. Postnatal urgent laparotomy may be required for these neonates. After close antenatal follow-up, pediatric urology consultation is essential for appropriate postnatal management of complicated patients having in utero treatment due to congenital obstructive uropathies.

Conclusion

Vesicoamniotic shunting is gaining popularity in antenatal treatment of selected cases of congenital obstructive uropathy. If the technique is successfully performed, it may provide a normal lung development with less potential long term renal risks in appropriate cases. Potential complications like abdominal organ herniation due to abdominal wall defect should be kept in mind and close follow-up is essential for fetuses with suspicion of in utero stent dislodgement.

Informed consent

Informed consent was obtained from patients for the publication of this case report

Funding

There is no financial support and sponsorship.

Conflict of Interest

All authors declare that they have no conflict of interest.

References

1. Peters CA. Obstruction of the fetal urinary tract. J Am Soc Nephrol. 1997 Apr;8(4):653-63. doi: 10.1681/ASN.V84653.
2. Nguygen TH, Thorup JM, and Larsen T. Vesico-amniotic shunt-therapy in fetal obstructive uropathy. Ugeskr Laeger 1996 Sep 23;158(39):5463-4.
3. Elder JS, Duckett JW Jr, and Snyder HM. Intervention for fetal obstructive uropathy: has it been effective? Lancet 1987 Oct 31;2(8566):1007-10. doi: 10.1016/s0140-6736(87)92567-0.
4. Robichaux AG 3rd, Mandell J, Greene MF, Benacerraf BR, Evans MI. Fetal abdominal wall defect: a new complication of vesicoamniotic shunting. Fetal Diagn Ther. 1991;6(1-2):11-3. doi: 10.1159/000263618.
5. Lewis KM, Pinckert TL, Cain MP, Ghidini A. Complications of intrauterine placement of a vesicoamniotic shunt. Obstet Gynecol. 1998 May; 91(5 Pt 2):825-7. doi: 10.1016/s0029-7844(97)00693
6. Gehring JE, Cain MP, Casale AJ, Kaefer M, Rink RC. Abdominal wall hernia: an uncommon complication of in utero vesicoamniotic shunt placement. Urology. 2000 Aug 1;56(2): 330. doi: 10.1016/s0090-4295(00)00581-1.
7. Irwin BH, Vane DW. Complications of intrauterine intervention for treatment of fetal obstructive uropathy. Urology. 2000 May 1;55(5):774. doi: 10.1016/s0090-4295(00)00501-x.
8. Springer A, Fartacek R, Reck CA, Horcher E, Bettelheim D. Major complication after intrauterine vesico-amniotic shunting. Afr J Paediatr Surg. 2010 Sep-Dec;7(3):200-2. doi: 10.4103/0189-6725.70428. PMID: 20859032.