Findings that shed new light on the possible pathogenesis of a disease or an adverse effect

Unusual complication of vaginal delivery: is misoprostal the cause?

Papa Dasari,¹ Haritha Sagili,¹ Gurunandan Udupi²

¹Department of Obstetrics and Gynaecology, JIPMER, Puducherry, India

²Department of Surgery, JIPMER, Puducherry, India

Correspondence to Professor Papa Dasari, dasaripapa@gmail.com

Summary

A 20-year-old primiparous woman who delivered vaginally in a private hospital 5 h ago was referred to our institute as a case of ruptured uterus. She was very pale and tachycardic with well-contracted uterus of 18-week size but had a cervical tear extending up to the left fornix. Examination under anaesthesia showed colporrhexis of posterior vaginal wall with intestines at the site of colporrhexis. Emergency laparotomy confirmed the above findings and also revealed intestinal gangrene involving more than 10 cm. Repair of colporrhexis, cervical tear and resection and anastomosis of small intestines was carried out. She gave a history of administration of five doses of vaginal misoprostal during labour and fundal pressure at the time of delivery. Literature review revealed that vaginal misoprostal can cause overgrowth of clostridial organisms by decreasing the macrophage function and thus can lead to developmental gangrene of reproductive tract and gastrointestinal tract.

BACKGROUND

Spontaneous trauma to genital tract during vaginal delivery without instrumentation is very rare. Prostaglandins, in general, have been in use for more than three decades and prostaglandin E has been used for more than a decade for labour induction. The side effects are iatrogenic and may lead to maternal morbidity and mortality when appropriate dose and time of administration are not chosen properly. Fundal pressure during labour is an abandoned procedure and may lead to ruptured uterus and mortality. We encountered a case of traumatic vaginal delivery, which resulted in colporrhexis and intestinal gangrene following usage of vaginal misoprostal and possible brutal fundal pressure during the second stage of labour. This is the first such case in the literature.

CASE PRESENTATION

A 20-year-old, primiparous woman was referred to our Institute as a case of cervical tear with suspicion of ruptured uterus following vaginal delivery in a private hospital. She reached us after 5 h of delivery. On examination she was drowsy, tachypnoeic with a pulse rate of 112/min and blood pressure of 120/80 mm Hg. She appeared very pale and dehydrated. The respiratory system was clear. Abdomen was soft and the uterus was felt to be well contracted and of 18 weeks size. There was no shifting dullness. Episiotomy wound was raw and the edges were everted. There was minimal fresh bleeding per vaginum and speculum examination revealed cervical tear involving the left anterolateral lip of cervix extending up to fornix. There was no mass felt in the fornices. A diagnosis of postpartum haemorrhage was made and she was given two units of packed cell transfusion and was decided for exploration under general anaesthesia.

History regarding her labour and delivery was obtained after patient's recovery. She had spontaneous onset of labour and was hospitalised in the private hospital soon after the pain started. Vaginal misoprostal was inserted every 2 h for five times. The dose of misoprostal was not known to the patient. During the second stage of labour she was asked to bear down and fundal pressure was given by placing the knee of the attending person on the abdomen of the patient. There was no history of using any instruments for delivering the fetus. The fetus was alive and cried immediately after birth. She had excessive bleeding following delivery and one intramuscular injection was given after which she felt very drowsy. She was referred to our Institute for further management because of haemorrhage.

INVESTIGATIONS

At admission

- ▶ Haemoglobin (Hb)-5 g%.
- ▶ Blood group Rh-B positive.

Postoperative

- ▶ Blood sugar (random), 88 mg/dl.
- ▶ Blood urea, 16 mg/dl; serum creatinine, 0.6 mg/dl.
- ▶ Serum electrolytes—Na, 132 mEq/litre; K, 3.5 mEq/litre.
- ▶ Serum bilirubin, 0.5 mg/dl.
- ▶ Hb, 7.5 g%.
- ▶ Urine culture, sterile.
- ▶ Episiotomy wound swab culture, *Candida non-albicans* sensitive to fluconazole and amphotericin B.

DIFFERENTIAL DIAGNOSIS

Ruptured uterus.

TREATMENT

Immediate blood transfusion and resuscitation were undertaken. Examination under anaesthesia revealed friable ecchymotic vagina and congested oedematous cervix with a large anterolateral tear of cervix extending to the left fornix. The intestines were felt freely in the posterior fornix and the vagina was avulsed from the cervix (colporrhaxis of the posterior vaginal wall). Hence, laparotomy was performed after taking informed consent from relatives. There was about 200 ml of haemoperitoneum and the uterus was intact but the posterior vaginal wall was completely avulsed especially the left fornix up to which the cervical tear extended. There was a blackish discolouration of distal ileum for a length of about 10 cm along with a mesenteric tear (figure 1). Bilateral internal iliac ligation was performed because of diffuse bleeding from the area of colporrhaxis and it was repaired after suturing the upper part of the cervical tear. Resection and anastomosis of small bowel was performed by the general surgeon. Two intraperitoneal drains were kept and the abdomen was closed in layers. Four units of compatible packed cells were transfused. She was kept nil per oral for 4 days and received intravenous fluids. She received injection ceftriaxone, amikacin and metronidazole for 14 days and was on continuous bladder drainage for 10 days. The drains were removed after 7 days.

OUTCOME AND FOLLOW-UP

Outcome was satisfactory. The abdominal wound healed well and the sutures were removed on the 14th day. Episiotomy wound gaping was managed by secondary suturing. She stayed in the hospital for 15 days. The histopathology of resected intestine was reported as a 28 cm segment with two gangrenous segments of 9 and 8 cm with intervening normal bowel. The resected ends are viable and 4.5 cm away from the gangrenous area. The microscopic examination revealed necrosis of the mucosa. Mesenteric pad of fat showed congested blood vessels.

DISCUSSION

Colporrhaxis is an unusual but dreaded complication which occurs spontaneously or due to trauma. The term 'Colporrhaxis' was first coined in 1875 by Hugenberger who described 40 cases from the literature.¹ Later, there were a lot of publications in olden literature.^{2 3} Colporrhaxis

without uterine rupture is termed primary colporrhaxis and it is rare. Colporrhaxis is usually associated with uterine rupture (secondary colporrhaxis) and in our institute its occurrence was reported in 7.5% of cases.⁴ In 1932, Mahfouz³ reported its association in 2.5% of uterine ruptures. Spontaneous colporrhaxis was described in multiparous women especially in grandmultiparous women¹ and its occurrence in a primigravida is reported in only one case.⁵

The aetiology of colporrhaxis was well described in the 1950s¹ where it was stated that colporrhaxis used to occur most commonly as an extension of cervical tear or lower uterine segment tear due to unskillful and brutal attempts at delivery of the fetus by instrumental means. In the present case the unskillful attempts of giving fundal pressure by the knee of the attender has to be considered as a cause of colporrhaxis. This might have caused excessive pressure on the fetal axis resulting in necrosis and rupture of the vaginal vault. However, the administration of five doses of vaginal misoprostal in a patient who is already in labour also has to be kept in mind. Pubmed search did not show any case reports of primary colporrhaxis following vaginal misoprostal.

The other finding of intestinal gangrene in the present case is difficult to explain. Whether it is an association due to some other cause or due to vaginal misoprostal is the question. The most common cause of intestinal gangrene is obstruction due to hernia. This patient did not have any symptoms of intestinal obstruction prior to labour. The rare causes of intestinal gangrene include infection⁶ and infestation.⁷⁻⁹ The histopathological report did not reveal any of these causes in this patient. Drugs that result in intestinal ischaemia and gangrene include cocaine and methamphetamine.¹⁰ Cocaine abuse can cause mesenteric ischaemia and gangrene, which results in small and large bowel perforation as well as intraperitoneal haemorrhage. The distal ileum is most commonly affected, but there are reports of gangrene involving almost any part of the small bowel. The common underlying pathophysiological mechanism is cocaine-induced arterial vasospasm or vasoconstriction leading to intestinal ischaemia with mucosal and transmural necrosis.¹¹ No history of drug abuse is obtained in this case. In the present case trauma due to the pressure of knee on the abdomen may be the cause as trauma to the abdomen can result in intestinal ischaemia.¹⁰ However, direct trauma to the intestines is unlikely because of gravid uterus which displaces the intestines to the flanks.

The safe dose interval of misoprostal for labour induction is 25 µg for 4 h though various regimens exist and the uterine rupture rate varies from 1.4% to 5.6% with the usage of misoprostal.¹² A case of cervical laceration associated with the use of misoprostal was reported by Oyelese *et al.*¹³ It has been shown that misoprostal can impair the female reproductive tract innate immunity against *Clostridium sordellii* and *Clostridium perfringens* by impairing the function of macrophages in clearing up the infection especially when administered vaginally.¹⁴ Fatal cases of septic shock resulting due to clostridial infection following mifepristone as well as misoprostal for induced abortion and for labour induction are on record. *C sordellii* and *C perfringens* can cause uterine infection ranging from endometritis to gas gangrene including intestinal gas gangrene.¹⁵ The histopathologists did not use any special

Figure 1 Gangrene of small bowel.

stains to diagnose such infection in this patient and no microbiological specimens were obtained at the time of emergency laparotomy.

When colporrhexis occurs the bowel can prolapse into the vagina or outside the introitus. A case of bowel prolapse through colporrhexis as a complication of home delivery was reported by Panditrao and colleagues. In their case as the bowel was healthy it was repositioned vaginally and the repair was carried out thus avoiding laparotomy.¹⁶ In the present case bowel was felt though the rent vaginally and the state of the bowel was not known preoperatively further there was bleeding and extension of cervical tear up to the fornix making vaginal repair difficult and hence laparotomy was needed. In conclusion, the traumatic vaginal delivery in the present case may be due to a combination of abdominal trauma and misoprostal usage.

Learning points

- ▶ It is necessary to explore the genital tract for trauma even after normal vaginal delivery when postpartum haemorrhage occurs.
- ▶ Genital tract lacerations and ruptured uterus should be suspected when misoprostal is used for labour induction and a safe dosage schedule is to be advocated.
- ▶ In case of unexplained bowel gangrene request for immunohistochemistry examination to be made to the pathologist.
- ▶ It is essential to remember the rare complication of septic shock and gangrene resulting from the use of vaginal misoprostal.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. **Resnick L**, Muller HW. Colporrhexis with a report of a case of spontaneous primary rupture of the posterior vaginal vault during labour. *S Afr Med J* 1955;**27**:818–21.
2. **Gamble TO**. *Am J Obstet Gynecol* 1927;**14**:766.
3. **Mahfouz N**. *J Obstet Gynaecol Br Emp* 1932;**39**:743.
4. **Sahu L**. A 10 year analysis of uterine rupture in a teaching institution. *J Obstet Gynaecol India* 2006;**56**:502–6.
5. **Sharma KK**, Firth KM. Primary complete colporrhexis in primigravida. *Br J Obstet Gynaecol* 1993;**100**:1142–4.
6. **Kircher S**, Wossner R, Muller-Hermelink HK, et al. Lethal pneumatis coli in a 12 month old child caused by acute intestinal gas gangrene after prolonged artificial nutrition; a case report. *J Med Case Rep* 2008;**2**:238.
7. **Khan AS**, Bakhshi GD, Ellur S, et al. Small bowel gangrene: an unusual presentation of enterobius vermicularis infestation. <http://www.bhj.org/journal/2004> (accessed 29 May 2012).
8. **Bhutia KL**, Dey S, Singh V, et al. Ascaris lumbricoides causing infarction of the mesenteric lymph nodes and intestinal gangrene in a child: a case report. *Ger Med Sci* 2011;**9**:Doc12.
9. **Patel S**. Mesenteric Ischemia. http://www.cdmcriculum.org/ssm/gi.../mesenteric_ischemia.php (accessed 29 May 2012).
10. Intestinal Ischemia. <http://www.Mayoclinic.com> (accessed 29 May 2012).
11. **Hoang MP**, Lee EL, Anand A. Histologic spectrum of arterial and arteriolar lesions in acute and chronic cocaine-induced mesenteric ischemia: report of three cases and literature review. *Am J Surg Pathol* 1998;**22**:1404–10.
12. **Weeks A**, Alfervic Z, Faundes A, et al. Misoprostal for induction of labour with a live fetus. *Int J Gynaecol Obstet* 2007;**99**:S194–7.
13. **Oyelese Y**, Landy HJ, Collea JV. Cervical laceration associated with misoprostol induction. *Int J Gynaecol Obstet* 2001;**73**:16.
14. **Aronoff DM**, Hao Y, Chung J, et al. Misoprostol impairs female reproductive tract innate immunity against *Clostridium sordellii*. *J Immunol* 2008;**180**:8222–30.
15. **Cohen AL**, Bhatnagar J, Regan S, et al. Toxic shock associated with *Clostridium sordellii* and *Clostridium perfringens* after medical and spontaneous abortion. *Obstet Gynecol* 2007;**110**:1027–33.
16. **Panditrao SA**, Lakshmikantrao BP, Ramkrishna AM. Bowel prolapse through colporrhexis: a complication of home delivery. <http://medind.nic.in/jaq/t07/i6/jaqt07i6p553.pdf> (accessed 29 May 2012).

This pdf has been created automatically from the final edited text and images.

Copyright 2012 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit

<http://group.bmj.com/group/rights-licensing/permissions>.

BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Dasari P, Sagili H, Udupi G. Unusual complication of vaginal delivery: is misoprostal the cause?.

BMJ Case Reports 2012;10.1136/bcr-2012-007005, Published XXX

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow