1 Title.
2 Transvaginal repair of vesicovaginal fistula; surgical techniques to improve access and
3 successful vaginal closure.

4

5 Authors:

6 Professor Peter Dwyer

7 Mercy Hospital for Women, Heidelberg.

8 pdwyer@connexus.net.au

9 Financial disclaimer/conflict of interest: none.

10 Contribution to the Manuscript: Manuscript writing/editing.

11

12 Dr. Francisco Kaplan

13 Mercy Hospital for Women, Heidelberg.

14 franciscokaplan@gmail.com

15 Financial disclaimer/conflict of interest: none.

16 Contribution to the Manuscript: Manuscript writing/editing.

17

18 Dr. Julio Alvarez

19 Mercy Hospital for Women, Heidelberg.

20 julioalvarezmd@gmail.com

21 Financial disclaimer/conflict of interest: none.

22 Contribution to the Manuscript: Manuscript writing/editing.

23

24 Abstract.

25 This video demonstrates surgical techniques to improve closure of high vesicovaginal
26 fistula using the vaginal approach and the Latzko procedure.

27

28 Keywords.

29 Vesicovaginal fistula; Latzko procedure.

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

Introduction and hypothesis.

It is estimated that worldwide there are 2 million women with vesicovaginal fistula (VVF) (1) and in one year between 50 thousand to 100 thousand new cases. The main cause is childbirth and obstructed vaginal delivery, a condition common in developing countries mainly due to limited access to good obstetric care and Caesarean section. In contrast, in developed countries VVF is a rare condition with the most common causes being gynecologic surgery and pelvic radiotherapy (2). In developing countries, despite the size, lack of medical resources and complicated nature of the VVF (associated with rectovaginal fistula in 1-23% of cases) most VVF are repaired transvaginally. However, in developed country the majority of VVF, outside specialized centers, are repaired abdominally either as an open or laparoscopic procedure. This is despite the vaginal route using the Latzko procedure have a lower morbidity, less hospitalization and an equal success rate (3). Certainly urologists generally prefer the abdominal route, as most have not had extensive experience in vaginal surgery. Most gynecologists have not had the training or experience in VVF repair and frequently refer these patients on to urologists.

The aim of this manuscript and video is to demonstrate surgical techniques to improve successful closure using a vaginal approach, even when the VVF is high in the vagina and access is limited.

Case report and video.

A 37-year-old woman was referred to our department from Fiji with a VVF of 2 years duration. She had a Caesarean section for her first pregnancy for obstructed labour. In her second pregnancy she had a trial of vaginal delivery that resulted in a ruptured uterus, massive bleeding requiring blood transfusion of 8 units of blood and fetal death. A Caesarean hysterectomy was performed; the bladder was injured either with the uterine rupture or during the subtotal hysterectomy. Although abdominal bladder repair was attempted she developed a VVF postoperatively.

Assessment with a clinical examination, imaging (ultrasound and computerized tomography) and cystoscopy confirmed the diagnosis of VVF. The clinical, ultrasound and cystoscopic findings are shown in the video. Vaginal examination was difficult and uncomfortable, there was no vaginal prolapse present and urine was coming from the upper vagina. A VVF was demonstrated high on the vaginal wall, anterior to the cervical remnant on ultrasonic and CAT scans; the ureters and kidneys were functioning normally. On flexible cystoscopy the VVF was 1 to 2 cm. in diameter and surrounded by extensive healthy fibrotic tissue. The fistula was situated supratrigonally above and between the 2 functioning ureteric orifices.

Transvaginal repair of the VVF was performed following the basic principles of the Latzko technique (3) with some modifications. A Brantley Scott retractor was placed at the vaginal introitus to optimize vaginal exposure; as dissection proceeded the hooks of

this retractor were placed deeper into the vagina to retract the vaginal edges of the fistula repair. Cystoscopy was performed to again confirm the position of the VVF and to pass ureteric catheters to reduce the possibility of ureteric injury. A Foley catheter was passed through the VVF to facilitate access with traction on the VVF and allow for a more accurate fistula closure. A 1 cm circumferential incision was made using cutting diathermy and the vaginal epithelium was excised. The vagina was then widely dissected off the bladder to mobilize the tissues for tension-free closure, starting posterior so any blood loss would not obscure the surgical field. Finally the bladder wall was sutured using interrupted 2.0 polyglycolic acid (Vicryl) in two layers and the vaginal wall was closed with interrupted sutures of 2.0 polyglycolic acid (Vicryl). Cystoscopy was performed again to remove the ureteric catheters, confirm the patency of the ureters following intravenous indigo carmine injection, and to ensure a watertight closure of the VVF repair. A size 14 French Foley bladder catheter was left for 10 days. The patient was discharged home with a urethral catheter 2 days postoperatively that was removed on the tenth postoperative day following a normal cystogram.

At 1 month follow up the patient reported no urinary leakage although did have urinary frequency and urgency with a maximum functional bladder capacity of 350 ml on her urinary diary. This was most likely related to her extensive bladder scarring and was treated with bladder retraining.

Discussion.

The important surgical elements demonstrated in this video to successfully close this

116 VVF by the vaginal route and provide a good functional result are:

117 1. Good surgical access and fistula exposure aided by the Brantley Scott retractor in a

118 high lithotomy supine position, and the use of a Foley catheter to identify and access the

119 VVF.

120 2. Excision of vaginal epithelium should be kept to a minimum to ensure good

121 postoperative vaginal capacity and normal coital function. Wide mobilization of the

122 vagina off the bladder wall is necessary for tension-free fistula closure in multiple layers.

123 3. Excision of peri-fistula scar tissue is recommended in many texts but this is

124 unnecessary, makes the fistula larger and causes more bleeding.

125 4. Cystoscopy should be performed before and after VVF closure. Before surgery

126 cystoscopy will identify the site of the VVF and state of the bladder and vaginal tissues.

127 In this case the video shows that any initial inflammation and infection had been replaced

128 by healthy looking scar tissue. Ureteric catheters can be passed to ensure ureteric safety

129 and patency intraoperatively.

130 5. VVF can be situated close to the ureteric orifice but in most cases can be repaired

131 vaginally without of ureteric injury. Postoperative cystoscopy should be performed to

132 confirm patency and a watertight closure of the fistula.

133 6. Blood loss can obscure the surgical field but can be minimized by the use of diathermy

134 dissection, good suction and operating from a posterior to anterior direction.

135 7. The use of graft eg Martius fat pad graft is rarely needed for high VVF.

136

137 Following the basic principles suggested by Curvelaire in 1953 including good exposure,

138 good dissection, good approximation to the margins and good urinary drainage, vaginal

approach using the Latzko`s procedure has proven effective and safe in the surgical treatment of VVF with successful closure in greater than 85% of cases (4). The abdominal approach or combined abdominal-vaginal approach may be necessary when vaginal access is inadequate, where there is also ureteric injury or where another indication for abdominal surgery exists.

References.

1. WHO (2006) Obstetric Fistula: Guiding principles for clinical management and programme development. Editors: Gwyneth Lewis and Luc de Bernis. Available at http://whqlibdoc.who.int/publications/2006/9241593679_eng.pdf
2. Pushpa SS, Nabila H, Razia MA, Chandra MD (2009) Genito- urinary fistula: a major morbidity in developing countries. J Ayub Med Coll Abbottabad 21(2): 8– 11
3. Latzko W (1942) Postoperative vesicovaginal fistulas; genesis and therapy. Am J Surg 58:211
4. Rajamaheswari N, Bharti A, Seethalakshmi K (2012) Vaginal repair of supratrigonal vesicovaginal fistulae—a 10-year review Int Urogynecol J, published on line: 04 February 2012.