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Micro-uretero-vaginal fistula (MURVF) in emergency caesarian section: certain guidelines for management

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ABSTRACT

Background: Uretero-vaginal fistula, a variety of female urogenital fistula, is a psycho-socio-sexual stigma, hence, its awareness, prevention, high index of suspicion, early diagnosis and successful management for quick rehabilitation of such affected women before they are deserted from family and pushed in to flash trading**. Purpose of reporting:** Uretero-vaginal fistula of 1 mm or less in diameter, i.e., micro-uretero-vaginal fistula is neither suspected nor thought on first visit of the affected woman in light of asymptomatic and easily manageable minimal vaginal discharge**. Aims and objectives:** A high index of suspicion of probability of having uretero-vaginal fistula must be kept as one of the etiological factors in the differential diagnosis of minimal vaginal discharge and is required to be ruled out through critical vaginal examinations and special investigations. Effective management not only prevents psycho-socio-sexual problems but also prevents slow and permanent damage to lower and upper urinary tract in long term. **Material and methods:** A 40 years G_2 P_2 A_0 presented with 5-years history of continuous minimal and asymptomatic vaginal discharge after having undergone an emergency caesarean section for foetal distress. Examination revealed micro-uretero-vaginal fistula, that was managed successfully by anti-reflux uretero-neo-cystostomy (ureteric re-implantation). **Observations:** Lack of high index of suspicion and difficult and delayed diagnosis are responsible for late treatment of micro-uretero-vaginal fistula. **Results andConclusion:** Full recovery occurred following anti-reflux uretero-neo-cystostomy. Therefore, it is only the high index of suspicion that is required to initiate careful examinations and special investigations for early detection, treatment and rehabilitation of such affected woman. Persistence of long term minimal vaginal discharge following caesarean delivery, in the absence of vesico-vaginal fistula or genitourinary infection, could be the only indicator of micro-uretero-vaginal fistula necessitating detailed examinations and special investigations for its early diagnosis and treatment to safe-guard upper urinary tract and marital life.

Key words: Micro-uretero-vaginal fistula (MUrVF). Vaginal discharge. Obstructed labour. Emergency caesarean section. Ureteric re-implantation. Uretero-neo-cystostomy.

I. INTRODUCTION

Congenital uretero-vaginal fistulas are rare [1-3]. Female uro-genital fistulas are mainly iatrogenic wherein the adjacently coursing ureters are accidently transected or caught partially or fully in to deep suture-bites taken to control frightening and life-threatening haemorrhage from uterine vessels following emergency caesarean section, emergency total or sub-total hysterectomy, radical hysterectomy, excision of broad ligament tumours or pelvic sarcoma. This is considered as a troublesome complication[4] and diagnosis is delayed[5]. Therefore, a high index of suspicion of the possibility of micro-uretero-vaginal fistula must be kept in mind in those women who had been having asymptomatic vaginal discharge following caesarean section, hysterectomy, obstructed labour or excision of malignant pelvic tumour. The authors report a case of 1 mm diametered micro-uretero-vaginal fistula, developing after emergency

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caesarean section consequent upon foetal distress, that went undiagnosed and untreated for 5 years due to its asymptomatic behaviour.

II. MATERIAL AND METHODS:

A 40-years G_2 P_2 A_0 woman, at full term, underwent emergency caesarean section due to foetal distress. She was discharged on 3rd post-operative day. She presented in the outdoor of Department of Obstetrics and Gynaecology of PGIMS Rohtak with 5 years history of continuous watery vaginal discharge that started on the 5th day of discharge. She was continent and used to pass a thick and projectile urinary stream per urethra. Vaginal discharge was managed with frequent change of diapers. Colposcopy revealed slow and continuous watery discharge from right side of the vaginal vault through a pin-head sized rent. She was taken to operation theatre and placed in lithotomy position. Three vaginal swab-test was negative for vesico-vaginal fistula. Ultrasonography of abdomen, kidneys, ureters and bladder did not reveal hydronephrosis or hydroureterosis or any pelvic collection. Intra-venous pyelography did not show leakage of radio-contrast dye in to the vaginal vault. On cystoscopy, both ureteric orifices were normal in anatomy and functions. After pre-anaesthetic check-up, detailed counseling and informed consent, exploration through previous infra-umbilical transverse abdominal incision was planned. Under general anaesthesia, patient was placed in lithotomy position. The site of slow and continuous leakage of clear fluid from the vaginal vault was identified from less than 1 mm sized opening through which insertion of a well lubricated infant feeding tube resulted in continuous pouring of clear urine (Fig.1). Methylene blue-soaked cotton roll gauze was packed in to the vagina to facilitate its identification and visibility of dye from the site of division of the communicating tract between the ureter and the vaginal vault. Abdominal exploration through previous incision revealed dense adhesions and fibrosis around the lower end of right ureter (Fig.2). The infant feeding tube was withdrawn and the ureter was transected as low as possible to retain maximum length of healthy ureter to facilitate tension-free uretero-neo-cystostomy. The lower stump of the transected ureter was dissected free from the vaginal vault and further down till its entry in to the bladder. There was a small rent in the wall of lower end of right ureter communicating with the top of the right vault of vagina just lateral to the cervix. The lower end of the right ureteric stump was transfixed and ligated flush with the bladder wall. Vaginal vault was repaired in two layers, the inner continuous and outer interrupted with 3- vicryl on round bodied needle. The urinary bladder was opened up through a mid-line vertical cystotomy and the highest part of dome of bladder was chosen for right ureteric re-implantation. Lead-Better technique for ureteric re-implantation was used to prevent vesico-ureteric reflux. The re-implanted ureter was splinted by inserting 10F infant feeding tube that was taken out of the bladder in the right iliac fossa. A 16F Foley catheter was inserted trans-urethrally to ascertain un-interrupted continuous bladder decompression to promote un-eventful healing. The bladder was closed in two layers, i.e., inner continuous and outer interrupted 3-0 vicryl suture on round bodied needle. Pedicled omentum was sandwiched between the site of uretero-neo-cystostomy and the repaired vaginal vault. Abdomen was closed in layers after inserting a pelvic drain. Special care was taken to ensure adequate or marginally over-hydration to have 2ml of urine/ kg/ hour for forceful mechanical flushing of the urinary tract and to prevent clot retention for first three days of surgery. After recording blood pressure and pulse rate and to avoid hypotension, intra-venous diuretic (20mg of frusemide) was administered off and on to flush out thick blood-stained urine. Pelvic drain, sutures, ureteric splint and Foley catheter were removed respectively on 5th 10th 15th and 20th day of surgery. Thereafter, the patient was advised to evacuate bladder after every two hours and then with increasing intervals of 6 hours to train and increase the capacity of bladder. Kegel's pelvic floor exercises were continued for 3 months post-operatively. Routine urine examination and its culture sensitivity were done every third day of surgery and then for three consecutive days after removal of Foley catheter to rule out urinary tract infection. The patient reported for follow-up for two years and was completely dry and asymptomatic.

III. DISCUSSION:

Urogenital fistulas are considered to be extremes of psycho-socio-sexual stigma not only for the affected woman but also for her spouse, siblings and family members. Obstructed labour, emergency caesarean section and emergency hysterectomy in developing countries and a radical or extended radical hysterectomy in developed countries for pelvic malignancy are the principal etiological factors for female urogenital fistulas. Contrary to other types of female urogenital fistulas, the diagnosis of micro-uretero-vaginal fistula is difficult to make at the first visit because: (i) patient neglects minimal vaginal discharge , thinking it to be a normal occurrence after child

birth, (ii) the affected woman is continent and pass urine in thick and projectile urinary stream per urethra, (iii) there are no immediate adverse effects on lower or upper urinary tract, (iv) routine investigations are normal , (v) specific investigations like the abdominal USG, CT or MRI including contrast CT urography might fail to detect micro fistulas, (vi) three vaginal swab test could be inconclusive, (vii) antegrade or retrograde cysto-urethrogram is not informative, (viii) cystoscopy might demonstrate normally placed and functional ureteric orifices, (ix) trans-vesical ureteric cannulation may be normal, (x) intra-venous pyelography may be normal, therefore, in the presence of continuous vaginal discharge following caesarean delivery, emergency hysterectomy or obstructed labour, a high index of suspicion is required and the same is confirmed on intravenous administration of methylene blue or indigo carmine blue (top most vaginal swab will be stained blue) or oral intake of nitrofurantoin (NFT) or phenazopyridine (Pyridium) (the top most vaginal swab will be stained orange). Retrograde ureterography may or may not display site of uretero-vaginal fistula. The management of such micro-uretero-vaginal fistulas is through a trans-abdominal trans-peritoneal approach where the dissection is started in the virgin area to track ureter and then it is followed till its entry in to the urinary bladder. Start of dissection of ureter directly at the affected site having dense adhesions and fibrosis will cause injury to ureter and other pelvic structures. The ureteric cannulation will facilitate easy identification of ureter in the surgical field by feel of its being pulled out and pushed in. Further the ureter is identified by its anatomical location, vascular net-work, needle aspiration of clear fluid, presence of peristaltic waves apart from its staining by intra-venously injected dye. The ureter is likely to be confused with fallopian tube or nerve cords and vessels in the presence of its distorted anatomy due to long standing chronic fibrosis. The ureter must be transected just proximal to its unhealthy wall to avoid risk of its de-vascularization and to achieve healthy, safe and secured ureteric re-implantation.

In the present scenario of increased life expectancy following better diagnostic and therapeutic health facilities and correspondingly increase in pelvic malignancies and radical surgical procedures, the incidence of vesico-vaginal fistulas and the uretero-vaginal fistulas is expected to increase in future.

Caesarean section and caesarean hysterectomies are the etiological factors in developing countries[6]. Detailed history of sequence of events and nature of vaginal discharge will raise suspicion of the presence of uretero-vaginal fistula. A battery of examinations and investigations are required to confirm the diagnose of uretero-vaginal fistulas, and these include: urea and creatinine levels in vaginal discharge, careful and detailed colposcopy, cystoscopy, intravenous pyelography, USG abdomen, contrast CT and MRI of abdomen and pelvis, contrast CT urography, ureteric catheterization and ureterography, single or double dye test (methylene blue, indigo carmine), oral nitrofurantoin (NFT) or phenazopyridine (Pyridium) to cause staining of the top vaginal swab as blue or orange. Presence of dense fibrosis along the side of ureter indicates site of ureteric injury. Most of the time, ureter of one side is injured and bilateral ureteric injuries are less commonly seen presenting with anuria in the immediate post-operative period, that require emergent intervention for release or re-construct or re-implantation of affected ureters.

Surgical success rate could be as high as 98%[7]. The ureteric injuries could be: (i) complete transection, (ii) partial transection, (iii) partial trans-fixation and ligation of ureteric wall along with the bleeding vessels, (iv) complete trans-fixation of one or both ureters, (v) kinking and acute angulation of the ureter and (v) ureteric stricture and stenosis with dilatation of upper urinary tract. The most common site of ureteric injury is in its lower third region. Associated stricture, dilatation, urinoma or chronic abscess could also be present in long-standing neglected cases. Open surgical repair is expected to have 100% success, because dissection is done under direct vision and a robust re-enforcing water-proofing flap could be interposed between the site of uretero-neo-cystostomy and the repaired vaginal vault. The communicating tract of the lower segment of the transected ureter with the vault of vagina and its entry in to the detrusor of the bladder must be divided and sutured, else the urine from the bladder might reflux through the internal ureteric orifice and then through the tract in to the vagina to behave like a picture of vesico-vaginal fistula.

IV. CONCLUSION:

Careful history taking, detailed colposcopy, battery of routine and special non-radiological and radiological investigations might fail to diagnose micro-uretero-vaginal fistula unless highly suspected and kept in the differential diagnosis of minimal or asymptomatic vaginal discharge appearing in a woman who happened to be completely dry before obstructed labour,

caesarean section, emergency hysterectomy or other radical pelvic surgery.

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Fig.1.

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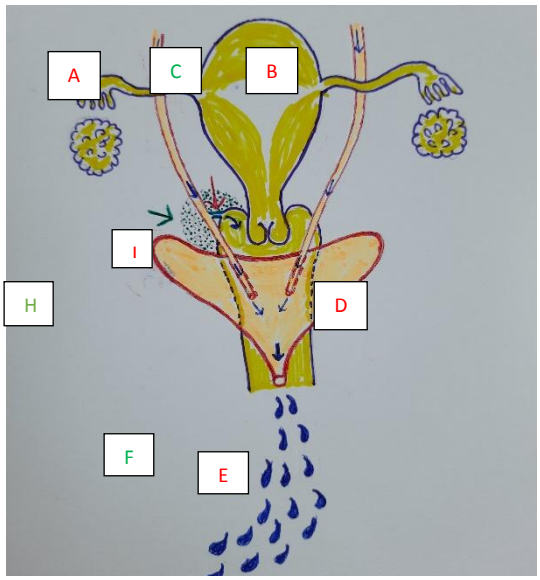

Fig.2.

Legends to figures:

Fig. 1. Right micro-uretero-vaginal fistula. Trans-vaginal cannulation of right ureter with infant feeding tube.

Fig. 2. Diagrammatic representation of micro-uretero-vaginal fistula (MUrVF). A-right ureter, B-left ureter, C-uterus, D-urinary bladder, E-urethra, F-vagina, G-projectile urinary stream, H-area of dense adhesions and fibrosis, I-communicating tract between lower end of right ureter and right vaginal vault.