

## A new classification for female genital tract fistula

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### Introduction

Neglected prolonged obstructed labour is the most common cause of genital tract fistulae worldwide. Pressure necrosis of soft pelvic tissues occurs between the impacted fetal presenting part and the bony maternal pelvis. Other obstetric reasons for genital tract fistulae include vaginal trauma and laceration from instrumental deliveries or spontaneous vaginal deliveries, from Caesarean sections, symphysiotomies and destructive procedures. It is estimated (probably an underestimation) that over 100 000 new cases of fistulae occur each year and current United Nations Population Fund (UNFPA) data indicates that currently, genital tract fistulae affect at least 2 million women world-wide.

In developed countries, over 90% of genital tract fistulae occur following pelvic surgery.<sup>1</sup> Urinary tract injury complicates 1% of all gynaecological procedures and Caesarean sections<sup>2</sup> and the incidence of genitourinary fistula following all hysterectomies is 0.8/1000.<sup>3</sup>

Surgery is the mainstay of treatment for the woman with a genital tract fistula. The rate of successful closure is over 85% in experienced hands<sup>4–6</sup> but there has been a tendency to focus on the surgical closure of the fistula as the successful outcome measure rather than function following surgery.<sup>7</sup> Successful surgical closure of the defect should be called 'anatomical closure' rather than 'cure', because it is clear many women suffer from ongoing pelvic organ, sexual and psychological dysfunction.<sup>7</sup>

### Current classification schemes for genital tract fistulae

Currently, comparative assessment within the published fistula literature is almost impossible as there is no accepted standardised method to classify genital tract fistulae. There is therefore a need for a standardised classification with defined terminology and objective measurements. This would allow comparisons in surgical techniques, complications of various techniques for a particular type of fistula and ongoing or long-term complications of different types of fistula.

Previous classifications have been generally based on the type, site and size of the fistulae (Tables 1 & 2). These classifications have intrinsic problems and some examples have been listed.

There are no definitions for the terminology used; for example, the definitions of a 'juxta-urethral fistula', or the

'closing mechanism' or a 'simple' fistula (see Table 1) are not clearly stated.

The anatomical site of the fistula is easier to define when the fistula is small. Larger fistulae, however, often straddle at least two anatomical sites. As an example a fistula which is 2 cm from the external urinary meatus, 3 cm wide in the largest diameter, has little surrounding fibrosis, and in which the ureteric orifices are close to the proximal fistula edge can be classified as 'urethral' (as it involves the urethra), 'juxta-urethral' (as it involves the tissues proximal to the urethra) or at the 'bladder neck' (as it involves the upper urethra and trigone) using a previous classification. This fistula can also be viewed as 'simple' by experienced surgeons or 'difficult' by the less experienced.

Similarly, a large 'juxta-cervical' fistula can extend down the trigone and involve the proximal urethra, and can be classified as 'juxta-urethral' by some surgeons and 'juxta-cervical' by others.

Classification by position in the vagina (e.g. mid- or high-vaginal fistula) can be misleading in women with shortened and stenosed vaginas and influenced by the surgeon's experience. A mid- or high fistula to an inexperienced surgeon can be considered low by an experienced one, whilst a fistula 3 cm from the introitus might seem to be at the 'upper vagina' in a woman with a grossly shortened vagina.

There is clearly a pressing need for standardisation of classification of genital tract fistulae. Standardisation in terminology not only allows for effective communication but also for comparisons in research and published literature.

### Clinical findings influencing surgery and subsequent function

Several key aspects in clinical findings should be incorporated into the classification for genital tract fistulae as these might have significant impact on surgical closure rates and post-operative or long-term complications.

- 1 Type of fistula – can be genito-urinary, ureteric, genito-anorectal or a combination
- 2 Number of fistula present

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**Table 1** Previous genitourinary fistula classification

Classification system	Description
Marion Sims (1852) <sup>11</sup>	i. Urethro-vaginal iii. Body and floor of bladder
McConnachie (1958) <sup>12</sup>	Grade 1: normal healthy tissues Grade 3: more scarring, poor vaginal access Grade 5: Inoperable per vagina Type A: less than 1 cm diameter Type C: over 2 cm
Lawson (1968) <sup>13</sup>	i. Juxta-urethral iii. Juxta-cervical v. Massive combination fistula
Hamlin & Nicholson (1969) <sup>14</sup>	i. Simple vesico-vaginal iii. Simple urethra-vaginal fistula v. Difficult high rectovaginal fistula
Waalwijk (1995) <sup>15</sup>	i. Type 1 fistula – not involve closing mechanism ii. Type 2 – involve closing mechanism A) without (sub)total urethra involvement a) without circumferential defect iii. Type 3 – ureter and other exceptional fistula
	ii. Bladder neck iv. Utero-vesical Grade 2: mild scarring Grade 4: Repeat repair Type B: over 1 but less than 2 cm Type D: any of above type with rectovaginal fistula ii. Mid-vaginal iv. Vault ii. Simple rectovaginal iv. Vesico-uterine fistula vi. Difficult urinary fistula – complex B) with (sub)total urethra involvement b) with circumferential defect

**Table 2** Previous genito-anorectal classification

Classification system	Description
Rosenshein (1980) <sup>16</sup>	i. Type 1: Total loss of perineal body with no other associated defects ii. Type 2: Fistula associated with loss of perineal body iii. Type 3: Fistula in lower third of vagina, intact or attenuated perineal body iv. Type 4: Fistula in middle third of vagina v. Type 5: Fistula in upper third of vagina

- 3 Presence of inflammation/infection – in the presence of inflammation and/or infection, surgery should be deferred
- 4 Site of fistula – currently, anatomical location is utilised (Table 1)
- 5 Size of fistula – the size of each fistula should be documented as it can influence subsequent bladder capacity and may affect detrusor function
- 6 Scarring or tissue deficit – many smaller fistulae can be associated with significant scarring or vaginal stenosis. Scarring can limit access to the fistula and markedly increase the degree of difficulty encountered at time of surgery. Scarring and vaginal stenosis can also be a cause of sexual dysfunction following fistula surgery
- 7 Adherence to the pubic symphysis or the pubic bone – in some instances, in particular distal genitourinary fistulae, there can be a complete circumferential loss of the urethra. In these circumferential fistulae, the anterior urethral wall is frequently adherent to the periosteum of the posterior aspect of the pubic symphysis and the urethra is immobile; these women are at risk of postfistula urinary incontinence with a 'drain-pipe' functionless urethra
- 8 Relationship between ureteric orifice and the edge of the fistula
- 9 Presence of bladder calculi – bladder calculi can be large and associated with infection and ongoing inflammation. In the presence of ongoing inflammation and/or infection the calculi should be removed and fistula closure delayed.

### Proposed new classification for genital tract fistulae

To standardise the classification system, reduce subjective variation and to assess possible long-term complication risks, this new classification considers a number of items:

Fixed reference points are utilised to allow standardisation of description and comparison by different observers. The external urinary meatus is used for the fixed reference for genitourinary fistula and the hymen for genito-anorectal fistula.

Length of vagina allows assessment of the relative size and position of the fistula and is also a risk factor for subsequent sexual dysfunction.

Length of the sphincteric mechanism is a possible risk factor for pelvic organ dysfunction and incontinence. The sphincteric mechanisms for both genitor-urinary and genito-anorectal fistulae are situated more than 3.5 cm from the fixed reference points.

Size of fistula is measured in centimetres in the maximum antero-posterior and transverse dimensions. Fistula size has been cited in the past, although not consistently, as a risk factor for pelvic organ dysfunction.<sup>8-10</sup> It also has implications on anatomical closure, tissue deficit and use of graft tissue to augment the fistula repair.

The number of fistula (genito-urinary and anorectal) at each site.

Special circumstances are conditions that have a negative impact on surgical closure of the fistula (e.g. surgical repair

in women who have postradiation fistulae or previous failed fistula repairs is more likely fail).

### **Genitourinary fistula classification**

The new classification divides genitourinary fistulae into four main types, depending on the distance of the distal edge of the fistula from the external urinary meatus. These four types are further subclassified by the size of the fistula, extent of associated scarring, vaginal length or special considerations.

Type 1: Distal edge of fistula > 3.5 cm from external urinary meatus

Type 2: Distal edge of fistula 2.5–3.5 cm from external urinary meatus

Type 3: Distal edge of fistula 1.5 – < 2.5 cm from external urinary meatus

Type 4: Distal edge of fistula < 1.5 cm from external urinary meatus

- (a) Size < 1.5 cm, in the largest diameter
- (b) Size 1.5–3 cm, in the largest diameter
- (c) Size > 3 cm, in the largest diameter

- i. None or only mild fibrosis (around fistula and/or vagina) and/or vaginal length > 6 cm, normal capacity
- ii. Moderate or severe fibrosis (around fistula and/or vagina) and/or reduced vaginal length and/or capacity
- iii. Special consideration e.g. postradiation, ureteric involvement, circumferential fistula, previous repair.

As an example, with this proposed classification in a Type 2bi fistula the ureteric orifice can be close to the fistula edge and it is recommended that ureteric orifices be identified prior to or during surgery, whilst the woman with a Type 3aii fistula is probably at a higher risk of postoperative urinary incontinence and requires followup.

### **Genito-anorectal Fistula Classification**

Type 1: distal edge of fistula > 3.5 cm from hymen

Type 2: distal edge of fistula 2.5–3.5 cm from hymen

Type 3: distal edge of fistula 1.5–< 2.5 cm from hymen

Type 4: distal edge of fistula < 1.5 cm from hymen

- (a) Size < 1.5 cm, in the largest diameter
- (b) Size 1.5–3 cm, in the largest diameter
- (c) Size > 3 cm, in the largest diameter

- i. No or mild fibrosis around fistula and/or vagina
- ii. Moderate or severe fibrosis
- iii. Special consideration e.g. postradiation, inflammatory disease, malignancy, previous repair.

In this proposed classification, a woman with a Type 1cii fistula might require faecal diversion if there is ongoing inflammation or infection at the fistula site. Type 3 or 4 fistulae are associated with a high risk of external anal sphincter involvement and might require concomitant sphincter repair.

## **Conclusions**

There is currently no accepted standardised method for genital tract fistula classification. Previously described fistula classifications have been mainly based on subjective categorisations. It is therefore difficult to compare and interpret results from the literature using these older classifications. The new proposed classification attempts to more objectively classify the fistulae by utilising a fixed reference point and specific measurements and by taking into account possible surgical and postoperative sequelae.

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