# Principles of fistula surgery

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The aim of surgery is to keep the patient continent and comfortable and whenever possible to eradicate the fistula. John of Arderne , 1307–1390, was the first English surgeon of note. He practised at Newark-on-Trent, and, from 1370, in London, UK. He described his opera tion for the treatment of fistulae in about 1376. - - - - Fistulotomy , or laying the fistula tract open and allowing it to heal by secondary intention, has been practised for centuries De Arte and was beautifully described by John of Arderne in his -

Figure 80.33 Three-dimensional endoanal ultrasonography images in the axial and sagittal plane showing an ano-vagina /f_i stula (arrows) tracking from 12 o’clock towards the posterior vaginal wall at the lower canal level (courtesy of Dr Alison Corr, Consultant Radiologist, St Mark’s Hospital, London, UK). Figure 80.34 Axial T1-

weighted post- contrast (a) and sagittal T2-weighted (b) magnetic resonance imaging sequences demonstrating an anterior /f_i stula tract (arrow) traversing the perineal body to track under the base of the penis towards the scrotum (courtesy of Dr Alison Corr, Consultant Radiologist, St Mark’s Hospital, London, UK).
Figure 80.35 Coronal magnetic resonance imaging scan (short tau inversion recovery [STIR] sequence) demonstrating a primary track in the right ischiorectal space (short arrow)

# that crosses the sphincters to open into the anal canal just below the puborectalis. A blind sec

ondary extension (long arrow) passing to the contralateral side in the roof of the left ischiorectal fossa was the cause of /f_i stula persistence.

meaning a bristle) to drain fistula tracts and gradually deliver the tract to the surface has a long history , most famously used by Charles Felix to treat French King Louis XIV . Patients with minimal symptoms may be managed expec tantly . Fistula eradication requires surgery , the extent of which must be balanced with the need to preserve continence. Divi sion of any component of the sphincter mechanism carries some risk to continence. The most important determinant of function after fistulotomy is the amount of muscle left behind rather than tha t divided. In the pr esence of a normal bowel habit, continence is usually maintained as long as a minimum length of external sphincter is retained (2 /uni00A0 cm as a rule but less in some cases). Most fistulae are simple; however, a significant minority are complex ( Table 80.2 ) and warrant specialist referral. The multitude of strategies advocated attests to these di ffi cult situ ations; comparisons between tec hniques are di ffi cult because of the heterogeneity of patient groups, the variability in clas sification, the inapplicability of certain techniques in some situa tions, inadequate reporting of functional outcomes, inad equate follow-up and surgeon preference over-riding entry into pr ospective randomised trials. Track preparation Tract preparation is an increasingly accepted concept in fistula surgery . It assumes that healing is prevented by epithelialisa tion of the track or that a secondary extension or undrained collection will induce early recurrence. Thus, a period of loose seton drainage followed by thorough debridement of the fistula track should improve healing rates. Some tec hniques, such as fistula plug, ‘ligation of the intersphincteric fistula tract’ (LIFT) (Rojanasakul) or ‘fistula tract laser closure’ (FiLaC™), require a particular track anatomy – such as a single straight trans-sphincteric tract – to be successful. In these cases, track preparation will facilitate healing of secondary tracks before definitive surgery . Fistulotomy Fistulotomy involves division of all structures lying between the external and internal openings. It is therefore applied mainly to intersphincteric fistulae and trans-sphincteric fistulae involv ing less than 30% of the external sphincter (but not anterior fistulae in women). After full examination under anaesthesia in the lithotomy or prone jack-knife position, during which the internal opening is identified, a grooved fistula probe is passed from the external to the internal opening ( Figur e 80.36 amount of sphincter below and above the probe is noted and, if indicated, the track is laid open over the probe. Granulation tissue is curetted and sent for histological appraisal and the wound edges are trimmed. Secondary tracks, often identified as granulation tissue that persists despite curettage, should be laid open or drained. Marsupialisation reduces wound size and speeds up healing. Primary tracks crossing the external sphincter more deeply have been managed with good outcomes by fistulotomy and immediate reconstitution of the Charles Felix de Tassy , 1635–1703, on 18 November 1686 operated on Louis XIV , inserting a seton. Arun Rojanasakul , contemporary ,

Professor of Surgery , Chulalongkorn University , Bangkok, Thailand. - - - - - - divided muscle – failure to eradicate all sepsis and subsequent breakdown of the repair can be problematic. Alternatively , a staged fistulotomy may be carried out in which secondary tracks are laid open and only part of the sphincter enclosed by the primary track is divided, with the remainder encircled by a loose seton. After su ffi cient time for healing of the wound and fibrosis, the seton-enclosed track is divided at a second stage. Fistulectomy This technique involves coring out of the fistula, usually by diathermy cautery; it allows better definition of fistula anatomy than fistulotomy , especially the level at which the track crosses the sphincters and the presence of secondary extensions. If the sphincteric component of the fistula is deemed low enough to allow safe fistulotomy , then this may proceed (at the expense - of longer healing times than conventional fistulotomy). If laying open is not advisable, the sphincteric component can be managed by another method. Setons ), the Setons have been used in a variety of ways in fistula surgery and it is important for surgeons to be clear about what they are trying to achieve in a particular situation. Loose setons are tied such that there is no tension upon the encircled tissue; there is no intent to cut the tissue. A variety of materials have been used but the seton should be non-absorbable, non-degenerative and comfortable. Tight or cutting setons are placed with the intention of cutting through the enclosed muscle. Loose setons are most commonly used before ‘advanced’ techniques (fistulectomy , advancement flap, cutting seton)

# (a) (b) (c) (d) Figure 80.36 Fistulotomy. A grooved probe is passed from the exter

nal to internal openings (a) and the track laid open over the probe (b) . The track is curetted to remove granulation tissue (c) , the edges of the wound are trimmed and the wound may then be marsupialised (d) . (Redrawn with permission from Nicholls RJ, Dozois RR. Surgery of the colon and rectum . Edinburgh: Churchill Livingstone, 1997.)

of a staged fistulotomy . Such a staged approach is valuable in treating secondary (horseshoe) tracks in the ischiorectal fossa, where the primary track crosses the external sphincter to reach the deep postanal space (Hanley). The internal sphincter is laid open to the level of the internal opening (or higher if there is a cephalad intersphincteric extension) to eradicate the presumed source and the sepsis in the intersphincteric space. A seton is then passed along the residual track around the denuded exter nal sphincter and tied loosely , and the wounds are dressed. The seton is left in place for 3 months and either simply removed or replaced by a cutting seton to complete the fistulotomy . Loose setons are also used for long-term palliation to avoid septic and painful exacerbations b y establishing e ff ec tive drainage, most often in Crohn’s disease and in those with problematic fistulae not wishing to countenance the possibility of incontinence ( Figur e 80.37 ). Cutting setons aim to achieve the high fistula eradica tion rates associated with fistulotomy but without the degree of functional impairment endowed by division of the sphinc ters at a single stage. The enclosed muscle is gradually severed (‘cheese wiring’), such that the divided muscles

do not spring apart, and the site of the fistula track is replaced by a thin line of fibr osis. Some recommend prior internal sphincter division; others recommend incorporation of the internal sphincter within the cutting seton. A variety of seton material has been used, either elastic and ‘self-cutting’ or non-elastic and tight ened at intervals, with the sphincter being divided at varying speeds. The same aim has been achieved by chemical cautery using an Ayurvedic method known in India as ksharasootra, which a specially prepared seton thread burns through the enclosed tissue. This outpatient method has been shown to be equivalent to one-stage fistulotomy in patients with inter sphincteric and distal trans-sphincteric fistulae. Ligation of intersphincteric fistula tract LIFT involves disconnection of the internal opening from the fistula tract at the level of the intersphincteric plane and removal of the residual infected glands without dividing any part of the sphincter complex. The tract is then ligated and divided, the internal part is removed and the external part of the track is curetted and drained ( Figure 80.38 ). Hence it is a sphincter-preserving procedure, thereby maintaining continence. Systematic reviews report healing rates of 75% with little or no impairment of continence.

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