Summary and Conclusion

The correct balance between eradication of fistula in ano and maintenance of continence depends upon accurate pre-operative assessment of fistula geographically; namely the site and level of any internal opening, the anatomy of primary track, and the presence of any secondary ramifications

The aim of this study was to evaluate use of magnetic resonance (MR) imaging in diagnosis of perianal fistulous disease and its relationship to the anal sphincter, pelvic diaphragm (levator plate) and the ischiorectal fossae.

Fistula in ano is a benign condition but may cause considerable distress to the patient and difficulty for the surgeon. Fistulae are intimately related to the anal sphincter complex, so that incision and drainage may damage those muscles to a variable degree with the risk of multiple unnecessary operations and anal incontinence. The correct balance between eradication of infection and maintenance of continence depends upon accurate pre-operative assessment of fistula geographically; namely the site and level of any internal opening, the anatomy of primary track, and the presence and extent of any secondary ramifications ***(Lunniss et al., 1992)***.

To understand the surgical options for treating fistulous disease, one must first consider the anatomy and function of the anal sphincters and the causes of perianal fistulas. The internal sphincter is involuntary and is composed of smooth muscle continuous with the circular smooth muscle of the rectum. It is responsible for 85%

of resting anal tone. In most individuals, it can be divided without causing a loss of continence. The external sphincter is composed of striated muscle and is continuous superiorly with the puborectalis and levator ani muscles. It contributes only 15% of resting anal tone, but its strong voluntary contractions resist defecation. A division of the external sphincter can lead to incontinence.

Several imaging modalities have been used in the past to delineate the fistulous track including fistulography, endoanal ultrasound and CT scanning.

Fistulography is done by injection of lipidol or other contrast medium through the fistulous track then X ray films are taken on the pelvis both antero-posterior, oblique and lateral. The track will be seen if it is simple or branched, if connected to anal canal, rectum or not connected and if the internal opening is detected in relation to pubococcygeous line (opening above this line denotes high fistula and vice versa) ***(Kuijpers and Schlupen, 1991)***.

Unfortunately, fistulography has two major drawbacks. First, extensions from the primary tract may fail to fill with contrast material if they are plugged with debris, are very remote, or there is excessive contrast material reflux from either the internal or external opening. Second, the sphincter muscles themselves are not directly imaged, which means that the relationship between any tract and the sphincter must be guessed. Furthermore, an inability to visualize the levator plate means that it can be difficult to decide whether an extension has a supra- or an infralevator location. Similarly, the exact level of the internal opening in the anal canal is often

impossible to determine with sufficient accuracy to help the surgeon. The net result is that fistulographic findings are both difficult to interpret and unreliable.

Anal endosonography has also been extensively used for the preoperative classification of fistula in ano.

By EAUS fistula are usually shown as low reflective tracks a few millimeters wide. Air within a track produces focal bright interface reflections. A superficial fistula is just a short track in the distal canal below the termination of the internal sphincter within the longitudinal layer. It is important to scan up and down the length of the track to determine its pathway, and secondary extension, and the site of the internal opening

However, there are undoubtedly several areas where anal endosonography has specific disadvantages. For example, insufficient penetration of the ultrasound beam beyond the external sphincter, especially with high-frequency transducers, limits the ability to resolve ischioanal and supralevator infections, with the result that extensions from the primary tract may be missed at endosonography. Also, anal endosonography cannot be used to reliably distinguish infection from fibrosis, because both have a hypoechoic appearance. This causes particular difficulties in patients with recurrent disease, since infected tracts and fibrotic scars are frequently combined. Anal endosonography is also disadvantaged by the inability to image in the surgically important coronal plane, so that it may be very difficult to distinguish supra- from infra levator extensions.

Computed tomography (CT) may depict fistula in ano. However, fistula depiction is not enough; fistulas must be classified correctly, and more recent and better data suggest that CT cannot be used for this purpose with sufficient accuracy. This is because the CT attenuation of the anal sphincter and pelvic floor is similar to that of the fistula itself, unless the latter contains air or contrast material. This is compounded by the inability to image in the surgically relevant coronal plane. CT also involves ionizing radiation and needs contrast media ***(Peter and Robin, 2001***).

Magnetic resonance has the potential to replace conventional imaging methods diagnosing perianal fistula. Multiplanar images permit direct anatomic and pathologic discrimination in axial, coronal and sagittal planes.

MR imaging is accurate, rapid and non invasive technique for assessing of perianal fistulas before surgery. It provides important additional information on secondary extensions and abscess formation in patients with complex and recurrent fistulas.

It provides unparalleled visualization of the perianal region including sphincter complex, perianal spaces and levator ani and is the imging method of choice in patient with perianal fistula.

MRI can accurately identify the fistula track in relation to the sphincter complex. This may provide more accurate anatomical information about the amount of sphincter above the track and the position and level of the internal opening thereby increasing the

likelihood of rapid successful surgical treatment and potentially reducing the need in some cases for multiple procedures.

Type of the fistula

According to MR findings and based on Parks classification the fistulae were classified into the following types; superficial, (when the fistula track is not reaching the sphincter level) intersphincteric, (If a fistula remains contained by the external sphincter throughout its course) transsphincteric, (when internal opening is anal and fistula pierces both layers of the sphincter complex reaching the skin through the ischiorectal fossa) suprasphincteric (fistula penetrate the pelvic floor above the level of the puborectalis and internal opening is anal) and extrasphincteric (fistula penetrate the pelvic floor above the level of the puborectalis and internal opening is rectal).

In conclusion, the MR imaging has been shown to demonstrate accurately the anatomy of the perianal region. In addition to showing the anal sphincter mechanism, MR imaging clearly shows the relationship of fistulas to the pelvic diaphragm (levator plate) and the ischiorectal fossae special on patients with complex and recurrent fistulae.