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ANAL ENDOSONOGRAPHIC ASSESSMENT OF THE ACCURACY OF CLINICAL DIAGNOSIS OF OBSTETRIC ANAL SPHINCTER INJURY AND CORRELATION WITH ANAL FUNCTION AND SYMPTOMS.

Hypothesis / aims of study
Clinically diagnosed obstetric anal sphincter injury (OASIS) occurs in 2.9% of primiparous women and 0.8% of multips. Anal endosonography (AES) is accepted as the gold standard assessment tool to assess the integrity of the anal sphincter complex following OASIS. AES identifies evidence of anal sphincter injury in 11% with a further 18% sustaining an injury to the pelvic floor ancillary muscles (transverse perineii, puboanalis and puborectalis).(1) OASIS is associated with deterioration in continence in 25% of women. There is a positive correlation between the extent of external anal sphincter injury and the degree of anal incontinence(2) with further deterioration in function associated with a combined internal and external anal sphincter injury.(3) The accurate assessment of OASIS at the time of injury can be difficult. The aims of this study were to assess the accuracy of clinical diagnosis of OASIS and correlate the extent of anal sphincter injury with anal physiology and symptoms.

Study design, materials and methods
Between June 2008 and February 2012 all women with a clinical diagnosis of obstetric anal sphincter injury were referred as per hospital protocol to a dedicated clinic three months post delivery for assessment. A full history was taken and a three-dimensional anal endosonography (AES) was performed. Anal endosonography was performed on the prone position using a B&K Medical 2050 three-dimensional AES probe. The scans were reviewed together with the history in a dedicated multi disciplinary meeting. The accuracy of clinical diagnosis of anal sphincter injury was assessed using AES and women with confirmed third degree tears or symptoms of faecal incontinence were referred for anal physiology (AP). AP was performed using Medical Measurement Systems water perfused system and an 8 channel radially arranged catheter. The prospectively collected data was assessed using Excel database and StatsDirect software.

Results
456 women were referred to the third degree tear clinic. The mean age was 31 and 77% were primiparous. An episiotomy was required in 169 (37%), forceps delivery in 144 (32%), ventouse delivery in 46 (10%). An epidural anaesthetic was performed in 200 (44%) of women.

Symptoms
143 (31%) complained of one or more of the following symptoms, flatus incontinence, passive incontinence, faecal urge incontinence, or post defecation soiling. 120 (26%) women had flatus incontinence, 8 (2%) had passive faecal soiling, 11 (2%) had urge faecal incontinence and 27 (6%) had post defaecation soiling.

Anal Endosonography
AES results were available for all the women (n=456). Anal sphincter injury was confirmed in 372 (81%) and 84 (18%) had no injury to the anal sphincters on AES. 104 (22.8%) had a persistent defect, 137 (30%) had scaring alone, 131 (34.8 %) had evidence of an anal sphincter repair (either end to end or overlap). An internal anal sphincter injury was identified in 101 (22%) women.

Anal Physiology
386 women were referred for AP, of which 309 women returned for tests. The mean maximal resting pressure was 57.0 mmHg and the mean incremental squeeze pressure was 50.0 mmHg.

Anal Endosonography and Symptoms
In those with a confirmed anal sphincter injury 108 (29%) reported flatus incontinence, 6 (2%) passive faecal incontinence, 11 (3%) urge faecal incontinence and 23 (6%) post defaecation soiling. In those with no sphincter injury on AES 12 (14%) reported flatus incontinence, 2 (2%) passive faecal incontinence, 0 (0%) urge faecal incontinence and 4 (5%) post defaecation soiling.

The rate of flatus incontinence (p=0.004) was significantly greater in those with a confirmed anal sphincter injury. The rate of urge faecal incontinence was also higher in those with a confirmed anal sphincter injury though those did not reach statistical significance (p=0.1)

Anal Endosonography and Anal Physiology
In those that underwent AP 301 (97%) had evidence of sphincter injury. In those with no sphincter injury the mean maximal resting pressure was 57.8mmHg with a mean incremental squeeze pressure was 66.6mmHg. The mean maximal resting pressure in those that had a sphincter injury was 57.0mmHg and a mean incremental squeeze pressure was 49.6mmHg.

In those with scarring alone, on AES, the maximum resting pressure was 61.7mmHg and squeeze increment of 52.3mmHg. This was not significantly different than those with a repair, on AES, with a maximum resting pressure of 57.1mmHg and a squeeze increment of 52.8mmHg. Those with a persistent defect, on AES, had a maximum resting pressure of 50.8mmHg (lower than those with scarring alone $p<0.0001$ and repair p=0.01) and squeeze increment of 52.8mmHg (lower than those with scarring alone p=0.02 and repair p=0.01). The mean resting pressure in those with an external anal sphincter injury alone was 55.5mmHg which was higher (p=0.01) than those with a combined internal and external anal sphincter injury (46.5mmHg).

There was no significant difference in the incremental squeeze pressure in those without and with an internal anal sphincter injury (45.8mmHg vs. 39.0mmHg).

Interpretation of results

AES allows for the assessment of anal sphincters and 20% of those women with a clinically diagnosed obstetric anal sphincter injury can be reassured that they have not had an injury.

Up to 30% of women with a clinically diagnosed obstetric anal sphincter injury will complain of anal incontinence symptoms. Those with a confirmed injury were more likely to complain of flatus incontinence and faecal urge incontinence.

The anal sphincter pressures were reduced in those women with a persistent defect and a combined internal and external anal sphincter injury. Scarring of the anal sphincters alone would suggest only a partial external anal sphincter injury and these women maintain their sphincter pressures. The anal sphincter pressures in those women with an evident repair on AES are similar to those with no anal sphincter injury or scarring alone.

Concluding message

Three-dimensional AES is able to reassure over 20% of women that they have not sustained damage to the sphincter. Women with a persistent sphincter defect have reduced anal pressures and evidence of a sphincter repair on AES normalised anal sphincter pressures. Those women with a confirmed anal sphincter injury are more likely to complain of anal incontinence symptoms.

References

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