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WHEN IS THE BEST TIME TO ASSESS OASIS AND LEVATOR ANI DEFECT?

Hypothesis / aims of study

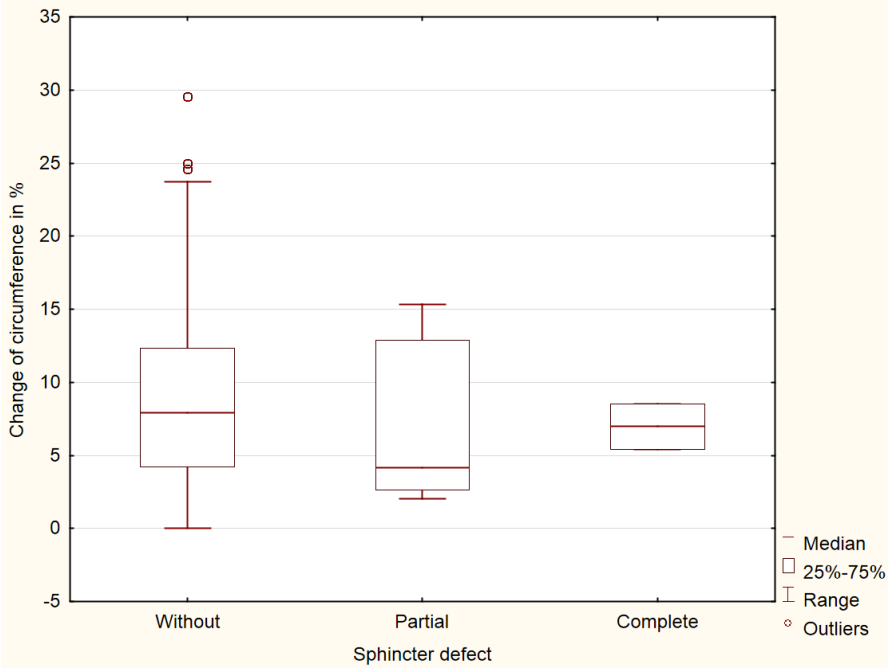
The aim of the study is to compare possibilities of 4D introital ultrasound (US) in early and late diagnostics of residual sphincter defects after sphincter repair.
Due to worse visibility and lower voluntary control of the external anal sphincter (EAS) and levator ani (LA) we would expect that the early control would show different results from the later assessment.

Study design, materials and methods

This is a retrospective analysis of eighty one patients with obstetrical anal sphincter injury (OASIS) who had immediate post-delivery anal sphincter repair.
Since 2009, patients with OASIS have been referred to our urogynecological unit before discharge from hospital. At two controls - early (two/three days postpartum) and late (three month postpartum) we examine the patient and perform 4D introital US. 4D ultrasound volumes were saved displaying rest and contraction of LA and EAS. Volumes were evaluated offline by two investigators blinded as regards date of the control and patient´s complications.
LA avulsion was diagnosed together with measuring hiatal area, sagittal and transversal distances at rest and at contraction as previously described [1]. Residual sphincter defects were evaluated by TUI of anal sphincter volume and function was measured as “contractility” of EAS. The assessment of contractility was executed as follows. We used inner border of EAS (between IAS and EAS and easily visible) to measure percentile change in inner circumference in the mid length of EAS. We compared the results from early assessment and three month assessment.

Results

At early control, residual defect was diagnosed in fourteen cases (17.3%). In additional eight cases (9.9%) residual defect could not be assessed due to poor quality of recorded data. At late control, residual defect was diagnosed in eleven cases (13.6%) and all eighty one cases could be assessed. Early control had false positivity of eight residual defects diagnosed without further confirmation and false negativity of four residual defects missed.
Mean change of contractility of EAS at early control was 6.1% and at late control 9.12%. This was significant (*p* .001) with late control displaying higher contractility.
Contractility of EAS at late control divided into three subgroups of patients: a, without residual defect; b, with partial defect and c, with complete defect of EAS did not show statistical significance despite being optically different (see figure below).



Assessment of LA avulsion at early vs. late control displayed avulsion in 45.06% vs. 37.04%; no avulsion in 48.77% vs. 62.96%; 6.17% vs. 0% could not be assessed. In twenty four cases (14.81%) diagnosis of avulsion was not confirmed at late control and in 3.70% avulsion was diagnosed at late control. Early control had significantly higher rate of LA avulsion diagnosed than late control (McNemar test of homogeneity 0.039).
Comparing changes of hiatal area, D1 and D2 at rest and at contraction, we found significant difference in changes of hiatal area and D1. Mean percentile change in hiatal area was 9.55% at early vs. 12.56% at late (*p* .018), in D1 6.22% at early vs. 9.85% at late (*p* <.001) and in D2 5.82% at early vs. 7.20% at late (*p* .092).

Cohen´s kappa (interrater correlation) for defects of EAS was calculated based on group of ten patients independently evaluated by both investigators. Early controls had Cohen´s kappa 0.529 (*p* 0.05) - moderate agreement and late controls had Cohen´s kappa 1.0 (*p* 0.02) - perfect agreement.

Interpretation of results

Early postpartum 4D introital US has lower agreement about residual sphincter defect and displays both false positivity and false negativity. Voluntary control of LA and EAS is limited. Visual conditions are usually worse at early postpartum US than at three months postpartum US.

Concluding message

We recommend 4D introital US at three months postpartum as a method of choice in diagnostics of residual sphincter defects and consider early 4D postpartum US facultative.

References

1. Ultrasound Obstet Gynecol. 2008 Dec; 32(7):941-5

Disclosures

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