INTRODUCTION

Obstetric anal sphincter injury (OASIS) occurs as a complication of a vaginal birth.

OBJECTIVE

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.

METHODS

This is a retrospective analysis of eighty one patients with 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 months postpartum) we examined the patient and performed 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].

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%. Comparison of changes of inner circumference in the mid length of EAS. We compared the percentile change in inner circumference in the mid length of EAS. Mean change at early 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 46.77% 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.

CONCLUSIONS

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. With usually worse visual conditions we consider early 4D postpartum US facultative in the follow up of patients with OASIS and recommend 4D introital US at three months postpartum as a method of choice in diagnostics of residual sphincter defects.

FUNDING: This work was supported by the Grant Agency of the Ministry of Health of the Czech Republic, grant NT13147-4 and by Charles University in Prague - UNCE204024