

4D ULTRASOUND ASSESSMENT OF MORPHOLOGICAL CHARACTERISTICS OF UROGENITAL HIATUS IN WOMEN AFTER ELECTIVE AND ACUTE CAESAREAN SECTION

Hypothesis / aims of study

Aim of this study was to compare urogenital hiatus parameters in women after acute and elective Caesarean Section (CS). This work is part of a larger study focused on pelvic floor changes after vaginal and Caesarean delivery.

Study design, materials and methods

This is an open, prospective and non randomised study. All patients undergo clinical examination and 3D/4D ultrasound of the pelvic floor 6 weeks post partum. All patients are examined in supine position, after voiding, with abdominal 3D probe placed transabdominally, on the same machine (Voluson E8, GE®). Patients are examined at rest, during maximal pelvic muscle contraction and upon Valsava manoeuvre. Volumes are analyzed offline using 4DView, GE®. Person who analyzes the volumes is blinded to the results of clinical examination. Following parameters are measured: size of the urogenital hiatus (UGH, cm²), maximal anteroposterior and laterolateral diameters (A, B), levator-urethra gap on both sides (LUG, cm) and parameter H (measured as distance between the urethrovesical junction – UVJ and horizontal line going through the lower edge of the symphysis pubis).

Results

We obtained data from 130 patients. 31 patients (23,8%) underwent elective CS, 99 patients (76,2%) delivered by acute CS. When we divide the latter group according to the stage of labour 84 (64,6%) had CS during the first stage of labour and 15 (11,5%) had CS during the second stage of labour. There was no levator avulsion found in any of the patients after CS. When we analyzed the data, there was no statistically significant difference in measured parameters between patients after acute or elective surgery and there also wasn't any difference when comparing acute CS in the first or second stage of labour. In patients after elective CS, mean UGH at rest was 11,92 (minimum 7,67, maximum 17,68), H at rest was 3,2 (minimum 2,4, maximum 4,6), during contraction mean UGH was 10,56 (minimum 6,92, maximum 15,22), mean H was 3,56 (minimum 2,72, maximum 4,68) and upon Valsava mean UGH was 13,89 (minimum 9,1, maximum 18,74), mean H was 2,52 (minimum 0,79, maximum 3,51). In patients after acute CS mean UGH at rest was 12,3 (minimum 7,79, maximum 19,79), mean H was 3,26 (minimum 2,1, maximum 5), during contraction mean UGH was 10,5 (minimum 6,98, maximum 16,98), mean H was 3,58 (minimum 2,28, maximum 5,71) and upon Valsava mean UGH was 15,53 (minimum 8,22, maximum 27,07) and mean H was 2,46 (minimum 0, maximum 4,18). After acute CS in the first stage of labour UGH sizes at rest, during contraction and upon Valsava were 12,21, 10,35, and 14,35 respectively. H dimensions in the same positions were 3,26, 3,56 and 2,44 respectively. In patients after acute CS in the second stage of labour UGH sizes at rest, during contraction and upon Valsava were 12,57, 11,16 and 13,9 respectively and mean H dimensions were 3,45, 3,68 and 2,8 respectively.

Interpretation of results

We haven't found any difference in any of the urogenital hiatus parameters in patients after elective and acute Caesarean Section. There also wasn't any difference in measured parameters when we compared acute CS performed in the first or second stage of labour. We also haven't found any levator avulsion, e.g. severe injury to the levator ani muscle in the total of 130 patients after CS so we conclude that CS may be protective factor in levator avulsion, even when performed during the second stage of labour. This study is part of a larger, ongoing project focused on pelvic floor injury during labour. We will be following these patients and assess same parameters 6 and 12 months after delivery and even from the first trimester of pregnancy in patients that are going to deliver from now on. We will also compare these data to the same set of data obtained from patients after spontaneous delivery.

Concluding message

There is no statistically significant difference in urogenital hiatus parameters measured by 4D ultrasound when comparing data from patients after elective and acute Caesarean Section.

Disclosures

Funding: We haven't received any funding or grant for this project **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** We receive written consent from all the patients before the ultrasound. It is a part of the regular postpartum check-up. **Helsinki:** Yes **Informed Consent:** Yes