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## Original Article

# Use of endoanal ultrasound as complimentary evaluation for detection of anal sphincter injury after vaginal birth

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### ABSTRACT

**Purpose:** Anal sphincter injury after delivery is the main factor in the pathogenesis of fecal incontinence. Clinical obvious and specific injury to anal canal sphincter is seen in 3% of vaginal deliveries. There are many women who do not have a clear and specific laceration but they are damaged by sphincter muscles of anal canal. The purpose of the present study is to investigate the frequency of occult anal sphincter injury after vaginal delivery by Endo-anal sonography.

**Methods:** Fifty women with first pregnancy were assessed at 27–33 weeks of pregnancy, and at 6 weeks and 6 months after vaginal delivery by questionnaire, examination and Endo-anal sonography. Women age, duration of delivery, the effect of epidural anesthesia, episiotomy and birth weight were studied and Endo-anal sonography results were recorded. Anal manometry was performed for all mothers before delivery and 5 ones with sphincter injury at 6 months and 3 years after delivery.

**Results:** Five (10%) patients, with mean age  $29.4 \pm 6.5$  years, mean neonatal weight of  $3874 \pm 287$ , and mean duration of delivery  $11.6 \pm 1.51$  h, had signs of sphincter injury in Endo-anal sonography. The injury was persisted at six months after delivery. Also, significant differences were seen between anal manometry before delivery and 6 months and 3 years after delivery ( $p = 0.006$  for mean squeezing pressure) in the five mothers.

**Conclusion:** Endo-anal sonography might be a good screening tool for early detection of post-partum anal sphincter damages. However, further prospective cost benefit studies should be performed to propose it as a standard of care.

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## Uso da ultrassonografia endoanal como avaliação complementar para a detecção de lesão do esfíncter anal após parto vaginal

### R E S U M O

#### Palavras-chave:

Ultrassonografia endoanal  
Parto vaginal  
Lesão esfínctérica  
Manometria

**Finalidade:** A lesão de esfíncter anal após o parto é o fator principal na patogênese da incontinência fecal. Observa-se uma lesão clínica óbvia e específica ao esfíncter no canal anal em 3% dos partos vaginais. Em muitas mulheres não se percebe uma laceração nítida e específica, mas houve lesão nos músculos esfínctéricos do canal anal. A finalidade desse estudo é investigar a frequência de lesão oculta de esfíncter no canal anal em seguida ao parto vaginal por meio da ultrassonografia endoanal.

**Métodos:** Cinquenta mulheres primíparas foram avaliadas no período de 27-33 semanas de gestação e também a 6 semanas e 6 meses após o parto vaginal por meio de questionário, exame e ultrassonografia endoanal. Foram anotados a idade das pacientes, a duração do parto, o efeito da anestesia epidural, episiotomias e peso do bebê ao nascer; também foram registrados os resultados da ultrassonografia endoanal. Antes do parto, todas as gestantes foram submetidas a um exame de manometria; e 5 mães com lesão esfínctérica também passaram por esse procedimento a 6 meses e 3 anos após o parto.

**Resultados:** Cinco (10%) pacientes, com média de idade =  $29,4 \pm 6,5$  anos, peso médio do bebê ao nascer =  $3874 \pm 287$  gramas e duração média do parto =  $11,6 \pm 1,51$  horas, apresentavam sinais de lesão esfínctérica ao exame por ultrassonografia endoanal. Seis meses após o parto, as lesões persistiam. Também foram observadas diferenças significativas entre a manometria anal antes do parto e a 6 meses e 3 anos após o parto ( $p = 0,006$  para média de pressão de contração) nas cinco mães.

**Conclusão:** A ultrassonografia endoanal pode ser um bom instrumento de triagem para a detecção precoce de lesões do esfíncter anal no pós-parto. Contudo, é importante que sejam realizados novos estudos prospectivos e de custo-benefício, para que essa técnica possa ser proposta como padrão terapêutico.

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## Introduction

Every year, 50 million women during pregnancy, childbirth, or after that are stricken with complications and 15% of women live with chronic complications and disabilities.<sup>1</sup> One of these complications is anal sphincter injuries. Some risk-factors are proposed which associate with increase of anal injuries are: induction of labor, epidural analgesia, birth weight more than 4 kg, persistent occipitoposterior position, prim parity, second stage of delivery longer than 1 h and use of forceps in delivery.<sup>2</sup>

Studies showed that women who experience perineal trauma complain from urine and stool incontinence, painful intercourse, bleeding, lasting pain and pelvic muscles weakness. These problems are less in women who have healthy perineum.<sup>3</sup> Pain, urinary incontinence, sexual dysfunction, and hemorrhoids are some problems that last up to one year after delivery and appear as chronic complications.<sup>4</sup> It is reported that 85% of women have some degrees of perineal damage after delivery, and some of them need future surgical intervention.<sup>4,5</sup>

Postpartum bleeding due to large cut episiotomy, extension of lacerations and a delay in repair of episiotomy can endanger mothers' health.<sup>4</sup> It is also stated that anal canal sphincter injury after vaginal delivery is considered as the main factor of pathogenesis of fecal incontinence and in some cases gas

incontinence, in young and healthy women. Pelvis floor during a vaginal delivery due to stretching of perineum by head of embryo is at risk of trauma which can cause anterior portion lacerations in sphincters.<sup>6</sup> Obvious and specific clinical injury to the sphincter of anal canal (lacerations of grade 3 and 4) is seen in 3% of vaginal deliveries. The amount of this injury in the United States is reported up to 18%. The amount of this clinical injury has been less in cases of mediolateral episiotomy (0.4–2.5%) and is more in cases of midline episiotomy (19%).<sup>2</sup>

In addition, there are women who do not have any laceration but their sphincter is injured. This kind of injury is called occult anal sphincter injuries that are not obvious in these women and can be detected by Endo-anal sonography. The amount of the injury has been reported in different studies from 9% to 35%.<sup>2</sup> Anal sphincter complex could be evaluated with various methods such as manometry, electromyography, MRI, and Endo-anal sonography. Endo-anal sonography has acceptable accuracy in detecting sphincter complex injuries.<sup>6</sup> The position of sphincter injury in this method is reported as a clock face so that 12 o'clock position is located at the anterior midline and injury is observed as defect and disruption of sphincters.<sup>7</sup>

Previous reports demonstrate the role of postpartum Endo-anal sonography to detect occult sphincter injuries; such study has not been done in Iran previously. The aim of this study is

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