A Normal Pattern of Uterine Involution Using S-FD in Primiparous Women and the Prevalence of Uterine Subinvolution

Sangestani Gita and Bashirian Saeed

Absence of the normal involution of uterus after delivery is considered as uterine subinvolution that can be resulted in complications such as metritis or retention of placenta. This is a descriptive study in order to: Find out the normal pattern of uterine involution in primiparous women and find out the prevalence and the reasons of uterine subinvolution. The sampling method of present study was performed in two stages, the first stage was judgement sampling and the second one was convenient sampling. Forty women in stage 1 and 180 women in stage 2 were surveyed. We used a centimeter ribbon and a check list in stage 1 and only an another check list for stage 2 to reach the goals of study. Present findings showed that the maximum of S-FD immediately after delivery was 22 cm and the minimum of it was 13 cm so its average was 16.81 cm. In the studied population, the first day that S-FD became zero, it was 11 days after delivery and the average daily decrease of S-FD was 0.8 cm. In the second stage of our study the results showed that in 88.3% parturients S-FD became zero and only in 11.7% of them S-FD became 1 to 3 cm after 20 days. The reasons were: metritis: placental retention: scar of uterine operation and vaginal bleeding. Among the above mentioned reasons the metritis was the most common cause (76.2%). According to the above findings the prevention of uterus infection and hygiene are the most efficient ways to avoid uterus subinvolution and its complications. Also we suggested the use of S-FD as a screening instrument to determine subinvolution of uterus. So we can soon find the patients who need suitable treatment.

Key words: Uterine, involution, subinvolution, S-FD normal pattern

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INTRODUCTION

The recurrence of the uterus after delivery in the condition of pre-pregnancy is called involution of uterus (Cunningham et al., 2005) and the distance between symphysis pubis to the fundus in centimeter is called S-FD (Chuette et al., 1997; Neilson et al., 2000) several authors have recommend daily measurement of the abdominal distance between the upper border of the symphysis pubis and the top of the uterine fundus (symphysis-fundal distance or S-FD) as a part of the screening process though the recording of this measurement is not a universal practice and in some articles a good correction between S-FD measurements and those obtained by ultrasound (Chuette et al., 1995; Challis et al., 2002). In England postnatal care by the midwife is continued for a minimum of ten days and in some maternity units the midwives observe the lochia, palpate the uterine fundus and control S-FD. In measuring S-FD midwives are attempting to distinguish a group of women where daily decrease in S-FD is reduced or absent (Chuette et al., 1995). In another study it is recommended to undergo uterine sonographic scanning and manual palpation to evaluate involution and presence of blood in the uterine cavity within 3 days after delivery patients particularly those with cesarean section (Shalev et al., 2002).

(SFH)=S-FD measurement is recommended to predict a foetus being SGA during pregnancy (Challis et al., 2003) in many settings, S-FD measurement has replaced clinical assessment of fetal size by abdominal palpation (Neilson et al., 2000). It is necessary to mention there is a positive correlation between parity and uterus diameters and uterine volume although there is no significant correlation between parity and uterine volume on the above mentioned fact, we consider only primiparous women in our study. The absence of normal involution is called subinvolution of uterus which can be caused by metritis or retention of placenta. Since Hemorrhage during the postpartum period is a life-threatening emergency for the mother (Macmullen et al., 2005) the first step to control is establishing rapid diagnosis (Dreyfus et al., 2004). Incidence of retained placenta has been 0.23% from all the births over 15 years and twenty-six (36.61%) of these women had come in a State of severe shock. Thirty-six (50.7%) women required general anesthesia for manual removal and one woman (1.40%) with an adherent placenta had to undergo hysterectomy. The maternal mortality was 5.6% (Chhabra et al., 2002).

And about metritis Usmani and others it was showed that in buffaloes the involution of the cervix and uterus was slower in the infected group than in the normal group (45.6 VS 31.1 days) and the incidence of subclinical uterine infection was 2.4% (Usmani et al., 2001).

Now as the postpartum assessment of uterine involution is considered important and the pattern of postnatal care varies greatly from one to another country (Chuette et al., 1995, 1995) this study performed to make a subtle normal pattern of uterine involution in an Asian society and to present S-FD as a screening criteria. In the second step we plan to determine the incidence of subinvolution and its causes have been considered.

MATERIALS AND METHODS

This is a descriptive study performed within 10 months and two stages in Fatemieh hospital, Hamedan, Iran.

In the first step just 15-32 year old healthy parturients were chosen to measure S-FD immediately after delivery and determine daily S-FD decrease and normal maximum time for completing uterine involution to pelvic cavity. The participating parturients criteria:

- Nulliparous
- Spontaneous normal vaginal delivery
- Single pregnancy
- Un infected uterus
- Living in the city
- Having delivery in term (37-42 weeks)
- Having healthy baby who was cared by his/her mother and nourished breast-feeding.

At the first stage 40 parturient were selected by targets-based sampling. A centimeter band and an information-record paper were used for each unit to determine the pattern of normal uterus involution.

To get the datas the parturient were visited and measured S-FD daily until all of them had complete involution of uterus into pelvic cavity (S-FD = 0).

In the second stage 196 parturient were considered. Sixteen cases were deleted and finally 180 case were analysed.

These women were nulliparous and had following criteria:

- Had normal vaginal delivery
- Delivered within 37-42 weeks
- Single pregnancy

In this stage women were examined after passing the maximum normal necessary time for completing involution of uterus using S-FD to determine incidence of subinvolution and its etiology.
Finally the obtained data was evaluated by statistical analysis.

RESULTS

The findings showed that 40% of our parturients were 20-24 years old we found that the distance between fondus and symphysis pubis immediately after delivery varied from 13 to 22 cm and its average is 16.8 cm, SD = 2.641 (Fig. 1). Also results showed that 11th day after delivery is the first day that S-FD become zero and the maximum rate of S-FD in this day in 9cm (Fig. 2).

Table 1 shows that in 62.5% of the parturients S-FD become zero on the 14th day after delivery (SD = 1.391). The average of S-FD on this day is 0.787 cm and the maximum rate of S-FD is 6 cm.

Results indicated that on 20th day after delivery complete involution of uterus into pelvic has happened in all cases.

So we can conclude that the involution of uterus occurs within 11th-20th days after delivery and 20th day is the maximum normal time for it.

Table 1: Distribution of absolute and relatively abundance in studied units according to the involution rate on the 14th day after delivery

<table>
<thead>
<tr>
<th>S-FD</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>25</td>
<td>62.5</td>
</tr>
<tr>
<td>0.5</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>10.0</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>2.5</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Average 0.787
Standard deviation 1.391

Fig. 1: Distribution of relatively abundance in studied units according to a distance between fondus and symphysis pubis immediately after delivery

Fig. 2: Distribution of relatively abundance in studied units according to the involution rate on the 11th day after delivery

Fig. 3: Distribution of relatively abundance of S-FD rate after the maximum necessary time to complete the involution of uterus into the pelvis in the studied units

Fig. 4: Distribution of relatively abundance of studied units according to the causes of subinvolution of uterus into the pelvis after maximum necessary time
Findings also showed that the average of S-FD daily decrease is 0.8 cm. In the most percentage of cases (88.3%) in the second stage of the survey S-FD became zero and only 11.7% encountered subinvolution of uterus (Fig. 3). In the last mentioned group (21 persons) the amount of S-FD measured within 1 (5%) to 3 (20.8%) cm.

The proposed etiologies for subinvolution of uterus is shown in Fig. 4. Metritis is the most common factor (57.1%) and also it is accompanied by another factors such as retained placenta and surgical operation on uterus (19.1%). The other factors are retained placenta (4.8%) and surgery on uterus (4.8%).

**DISCUSSION**

Considerable variability was found in normal daily decrease of S-FD in this study.

Although no relationship has been found in the method of baby feeding and the day on which the uterus ceased to be palpable (Chuette et al., 1997). All of our studied units had breast feeding baby. Also we found that the normal average time for involution of uterus into pelvic cavity (S-FD = 0) is 14.57th day after delivery the prevalence of abnormal uterine involution and its reasons demonstrated in the second stage of our project. Metritis, Retention of placenta and Surgery on uterus were found as the reasons. Chuette and others mentioned uterine infection as the most important factor too (Chuette et al., 1997).

Usmani and others (Usmani et al., 2001) found that uterine infection can make the involution process slower. In the other studies it is shown that E. coli, arcanobacterium pyogenes and Streptococcus sp. are the most common causes for uterine infection in mammiferous (Kaczmarowski et al., 2004).

As a brief conclusion it should be said S-FD will be zero after 11 till 20 days after delivery and its daily decrease is 0.8 cm. And the last but not the least: Sufficient attention in the third stage of labour, prevention of infection and hygiene are the best ways to prevent uterine subinvolution and its subsequences.

**REFERENCES**


