INTRODUCTION

Pakistan remains the 7th most populous country in the world with contraception being practiced by 30% couples.¹ The desire for birth spacing, however, does exist,² and suitable strategies for birth spacing require implementation. This is essential for improving maternal and newborn health.

Traditionally, healthcare providers have been weary of inserting intrauterine contraceptive device (IUCD) either during puerperium or in a scarred uterus (e.g. due to caesarean section) for fear of perforating it or introducing infection. With rising rates of caesarean section, the number of women who would be excluded from using this method of contraception would go on increasing sharply, if the same practice were encouraged. A fair number of women undergoing caesarean section are good candidates for using the IUCD for contraception. It offers the obstetrician an opportunity to insert the IUCD into the uterus under vision, thus obviating the fear of perforating the uterus during the procedure. A number of women fail to return for availing contraceptive services, once they leave hospital. IUCD insertion also offers women a chance to avail this method of contraception at the same time as they have caesarean section.

The experience of IUCD insertions at caesarean section from Pakistan is, however, limited. Studies are needed to be undertaken to find ways of promoting birth spacing strategies when women present to health facilities for services like delivery, including delivery by caesarean section.

The objective of this study was to determine the safety of IUCD (Multiload Cu 375) insertion at caesarean section in term of infection, conception and perforation rate and compare postoperative period (in term of pain, amount of bleeding and expulsion rate) of women who had caesarean section without IUCD insertion and to women who had IUCD inserted as an interval procedure.

ABSTRACT

Objective: To determine the safety (infection, conception rate and perforation) of intrauterine contraceptive device (IUCD, Multiload Cu 375) insertion at caesarean section and compare their postoperative period (in term of pain, amount of bleeding and expulsion rate) of women who had caesarean section without IUCD insertion and to women who had IUCD inserted as an interval procedure.

Study Design: A case control study.

Place and Duration of Study: Jinnah Postgraduate Medical Centre, Karachi, from November 2006 to October 2007.

Methodology: Group 1 (cases) were 50 women who had IUCD inserted at caesarean section. Groups 2 and 3 were controls, group 2 consisted of 50 matched women who had a caesarean section without IUCD insertion and group 3 consisting of 50 women who had IUCD inserted as an interval procedure. Degree of pain was assessed by doses of analgesics needed and amount of bleeding by the soaked pads, which were observed by doctor. Infection and expulsion was observed in immediate postoperative period during admission and at follow-up visits at 6 weeks and 6 months and conception was also checked. Analysis of variance was undertaken to compare characteristics at baseline on SPSS version 13. Data were analyzed using univariate methods, two-tailed t-test for continuous variables and chi-square test or Fisher's exact test as appropriate for dichotomous variables.

Results: Hospital stay of group 1 was 3.48 days as compared to 3.46 in group 2 (p=0.93). Wound was infected in 10% women in group 1 and 2% in group 2 (F-test = 0.10); lochia was heavy in 4% in group 1 and 0% in group 2 (F-test = 0.25). Thread was visible in 92% in group1 and 96% in group 3 (p=0.50). Eighty two percent women were willing to continue with IUCD in group 1 and 86% in group 3 after 6 months.

Conclusion: Women undergoing caesarean section, who are desirous of, and suitable for using this method, should be given the option of IUCD insertion at the same time.

Key words: Multiload. Caesarean section. Interval insertion.
METHODOLOGY

This was a case control study. One hundred and fifty subjects were recruited after obtaining their informed consent. Group 1 (cases) had 50 women who had IUCD (Multiload Cu 375) inserted at caesarean section, elective and emergency. Groups 2 and 3 were controls, of which group 2 consisted of 50 matched women who had a caesarean section, elective and emergency, without IUCD insertion and group 3, consisting of 50 women who had Multiload Cu 375 inserted as an interval procedure, at least 3 months following a vaginal delivery or abortion.

The subjects who had no history of heavy/irregular periods, dysmenorrhoea, pelvic inflammatory disease, present pelvic infection, uterine fibroids, or structural uterine abnormality or previous removal of IUCD for complications were recruited. In addition, the subjects undergoing caesarean section (Groups 1 and 2) who had no predisposing factor to postoperative infection (e.g. rupture of membranes prior to admission) or delivery of a stillborn baby at caesarean section, were also included in the study.

In group 1, during caesarean section, after delivery of the baby, placenta and membranes, IUCD was inserted through the incision in the uterus and the shortened thread pushed through the cervix from inside the uterus. The IUCD was not anchored to the uterus.

Subjects in group 3 had the IUCD inserted by trained doctors / family planning workers of the Reproductive Health Services Centre of JPMC.

The details of all three groups were recorded on the proforma. A data base was developed using Microsoft Excel, which was later converted to SPSS version.

The patients were followed-up at intervals of one week, six weeks and then six months. Degree of pain was assessed by doses of analgesics needed; bleeding was judged by the number of pads soaked, which were observed by doctor. Infection and expulsion was observed in immediate postoperative period during admission and at follow-up visits at 6 weeks and 6 months. Conception was also checked along with above mentioned parameters. Lochia and menstrual flow was said to be heavy when clots were passed. General and gynecological examination was carried out. It included a speculum examination to visualize threads of the IUCD (in groups 1 and 3). User’s satisfaction (absence of dysmenorrheal or dyspareunia and no objection from husband) and wish to continue with the use of IUCD were asked for and recorded. If she wished to have the IUCD removed, the reason for this was looked into. If the IUCD threads were not visible on speculum examination and there was no history of its expulsion, ultrasound examination of the pelvis/x-ray were undertaken after appropriate consent and preparation.

In case women failed to turn up for follow-up at the specified period, they were contacted through telephone, if required, the health workers visited residences of those who were lost to follow-up.

Orientation and training of staff was done by the Principal and Co-investigators before recruitment of patients. The staff was trained in appropriate counseling techniques as well as in filling of the proforma. The examination, IUCD insertion and surgical techniques were standardized.

All data were entered in standardized proforma and analyzed in SPSS (version 13). Analysis of variance was undertaken to compare characteristics at baseline. Potential differences in data were analyzed using univariate methods (two-tailed t-test for continuous variables and chi-square test or Fisher’s exact test as appropriate for dichotomous variables). Significance was set at 95%.

RESULTS

There was no significant difference between socio-economic and educational background of women in each group and their husband’s state of employment.

IUCD insertion at caesarean section did not alter the immediate postoperative period as compared to those who had caesarean section without intraoperative IUCD insertion (Table I).

Hospital stay of group 1 was 3.48 days as compared to 3.46 in group 2 (p=0.93). Wound was infected in 10% women in group 1 and 2% in group 2 (F-test = 0.10). Lochia was heavy in 4% in group 1 and 0% in group 2 (Fisher’s exact test).

Table I: Postoperative period comparison [data as mean (SD) or n (%)].

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th>Group 2</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV fluid use in 24 hours postoperative period (ml)</td>
<td>2940.0</td>
<td>2940.0</td>
<td>1.00</td>
</tr>
<tr>
<td>Hospital stay (days)</td>
<td>3.48</td>
<td>3.46</td>
<td>0.93</td>
</tr>
<tr>
<td>Wound infection</td>
<td>5 (10%)</td>
<td>1 (2%)</td>
<td>0.10 (Fisher’s exact test)</td>
</tr>
<tr>
<td>Heavy lochia</td>
<td>2 (4%)</td>
<td>Nil</td>
<td>0.25 (Fisher’s exact test)</td>
</tr>
</tbody>
</table>

Table II: Background characteristics at inclusion [data as mean (SD) or n (%)].

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th>Group 3</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>IUCD Thread visibility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 week</td>
<td>49 (98%)</td>
<td>48 (96%)</td>
<td>0.50</td>
</tr>
<tr>
<td>6 weeks</td>
<td>46 (92%)</td>
<td>48 (96%)</td>
<td>0.34</td>
</tr>
<tr>
<td>6 months</td>
<td>46 (92%)</td>
<td>48 (96%)</td>
<td>0.34</td>
</tr>
<tr>
<td>Willingness to continue with IUCD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 week</td>
<td>45 (90%)</td>
<td>49 (98%)</td>
<td>0.10</td>
</tr>
<tr>
<td>6 weeks</td>
<td>46 (92%)</td>
<td>45 (90%)</td>
<td>0.50</td>
</tr>
<tr>
<td>6 months</td>
<td>41 (82%)</td>
<td>43 (86%)</td>
<td>0.59</td>
</tr>
</tbody>
</table>
Insertion of intrauterine contraceptive device at caesarean section

(F-test = 0.25). Women who had IUCD inserted were followed-up for at least six months afterwards (Table II). Thread was visible in 92% in group 1 and 96% in group 3 (p=0.50); 82% women were willing to continue with IUCD in group 1 and 86% in group 3 after 6 months.

The desire to continue using the IUCD was not significantly different in women who had it inserted as an interval procedure. Forty nine (98%) were willing to continue using it at one week, 45 (90%) at six weeks and 43 (86%) at six months. The common reasons for unwillingness were heavy periods, abdominal pain and dysmenorrhoea. Two women opted for tubal ligation instead of IUCD at six weeks post insertion follow-up.

**DISCUSSION**

Intrauterine contraceptive device (IUCD) is the second most common modern method of contraception used by women in regions with large populations, including Pakistan. It is favoured by women who wish to adopt a contraceptive method that does not require regular motivation for use, or husband's participation and are not suitable for using hormonal methods. Less than a third of all women in each of our study group had ever used contraception before. There was no significant difference in the duration of their marriages or previous operative deliveries either. However, women who had IUCD inserted at caesarean section were younger and had a significantly lower parity as compared to those opting for interval IUCD insertion.

IUCD can be inserted vaginally after the puerperium as an interval procedure. Alternatively, vaginal insertion, immediate postpartum, following the delivery of the placenta (IPPI) or an abortion may be done. Intra-operative insertion at caesarean section is another option. In this study, no significant difference was observed between the intravenous fluid administration, analgesia requirement or amount of lochia in the first postoperative week. Similarly, the duration of postoperative hospitalization did not vary either. Superficial wound infection was observed in 5 women who had IUCD inserted at caesarean section as compared to only one of those women who did not have IUCD inserted at caesarean section (Fisher's exact test 0.1). The wound infection responded well to local treatment in 4 cases and one required additional oral antibiotics and resuturing of wound under local anesthesia.

In this study, IUCD was expelled into the vagina immediately after completion of caesarean section in one case only. In another 3, the IUCD threads were not visible at six weeks follow-up. One of them had had it removed by a local general practitioner, attributing the superficial wound infection to IUCD insertion. In the second case, the ultrasound scan and X-ray of the pelvis failed to show the IUCD. The woman herself had no recollection of it having been expelled. She was pregnant 12 weeks later. In the third case, although the thread was not visible, the ultrasound scan showed the IUCD in its correct place in the uterus. She opted to continue using it.

Among the women who had interval insertion of IUCD, one expelled it on the third day after insertion and another one had the IUCD thread ‘missing’ on the routine follow up checking on seventh day. The ultrasound and X-ray of the pelvis were suggestive of the IUCD's extra uterine location. She required laparoscopic removal of the IUCD from the peritoneal cavity on the tenth day after insertion. The uterine perforation that had occurred at the time of insertion did not require any intervention. She had laparoscopic tubal occlusion at the same time. In the rest of the 48 women in this group, all had the IUCD in its correct place at six months follow-up. The expulsion rate or the risk of uterine perforation was not significantly different in those who had the IUCD inserted at caesarean section or as an interval procedure.

Of the 49 who had the IUCD in place after intraoperative insertion (Group 1), 4 showed reluctance to continue its use a week later, but agreed to persevere after counseling. At six weeks follow up, one had had the IUCD removed by a local practitioner; 2 others wished to have it removed citing objections by the husbands. In one, the IUCD was removed and the other agreed to continue using it for another four months. Forty one women were happy with the IUCD at six months follow-up visit. The common reason for desire to remove the IUCD was the desire to have another pregnancy in 3 women because 2 of them had lost the infant they had delivered at caesarean section, 3 complained of pain in lower abdomen and the other 2 gave no reason for their unwillingness to continue.

The present as well as other studies have shown IUCD insertion at caesarean section to be effective and safe. The greater risk of expulsion after insertion at caesarean section is a possibility. However, the present study did not show any significant difference in expulsion or complications between interval insertion and insertion at caesarean section. There is evidence to suggest that intraoperative insertion may actually have lower expulsion rates and has better continuation rates. Insertion at caesarean section also offers an alternative to the common practice of tubal ligation, in cases of multiple repeat caesarean sections. Women who have had multiple caesarean sections at short intervals followed by tubal ligation, at a relatively young age may regret it later on, especially in view of the prevalent high perinatal and infant mortality rates. Therefore a reversible, albeit a long-term contraceptive method like IUCD in this group of women is a feasible option.
The number of women delivered by caesarean section is rising steadily throughout the world.\(^1\),\(^1\)\(^7\),\(^1\)\(^8\) Innovative methods for birth spacing, including intra-operative IUCD insertion, will achieve this objective. Coupled with appropriate technique of insertion to avoid complications, these ensure continuation of use.\(^1\)\(^9\) Insertion at caesarean section is also convenient for the woman, as she does not have to wait till the puerperium to start contraception.\(^2\)\(^0\) This reduces the risk of unplanned or unwanted pregnancies consequent to missed opportunity of starting contraception at the time of delivery itself.

CONCLUSION

Women undergoing caesarean section, who are desirous of, and suitable for using the contraception method (insertion of intrauterine contraceptive device) should be given the option of IUCD insertion at the same time.

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REFERENCES