PERFORATION OF UTERUS WITH COPPER—T DEVICES

(A Report of 3 Cases)

by

S. Y. EDULJEE,* M.D., D.G.O.

and

S. B. BASU,** M.D.

Introduction

Perforation of the uterus is a serious compl cation of the intra-uterine device. It was first brought into focus by Nakamoto and Buchman in 1966, when they reported 16 perforations of the Birnberg bow in a total of 544 insertions of the device. Since then research in intrauterine contraceptive technology resulted in the introduction of the copper-bearing devices. Though claimed for the physiological adaptability to the uterus by virtue of their shape, the copper bearing devices have 2 or 3 pointed ends which make them more perforation prone. Accord ng to Tatum (1973), the incidence of uterine perforation with Copper—T was 1:5000. This has not been borne out by the reports of other authors who have reported a fairly high inc dence of uterine perforation with Copper-carrying devices. Rienprayura *et al* (1973) reported 5 perforations in 1,220 Copper-T insertions. Williamson and Krikland (1974) found 6 perforations in 3000 insertions of the Copper-T in U.S.A. Cederquist *et al* (1975) have reported 6 perforations in 1153 insertions of Copper-T (1:192) and 3 perforations in 1156 insertions of Copper-7 (1:385). In our own institution we have within the last year encountered 3 cases of uterine perforation by the Copper-T device and are presenting the case reports.

*Associate Professor, Dept. of Obst. & Gynaecology, M.A.M. College and Associated Irwin & G. B. Pant Hospitals, New Delhi 110 002.

**Senior Resident, Dept. of Obst. & Gynaecology, Irwin Hospital, New Delhi.

Accepted for publication on 21-7-77.

CASE REPORTS

Case 1

Mrs. K., a 22 years old para 2, had Copper-T-200 device inserted in June 1975 in a New Delhi hospital, 4 months after delivery during lactational amenorrhoea. On her first follow up visit 2 months after insertion, she had no comp'aints but on speculum examination, the threads of the Cu-T were not seen. Hysterosalpingography confirmed that the device was lying outside the uterine cavity. On laparotomy done on 3-12-75, the threads of the Cu-T were seen protruding through the posterior aspect of the right broad ligament (Fig. 1). The anterior layer of the broad ligament was opened, the Cu-T was removed and the peritoneum closed. There were no adhesions.

Case 2

Mrs. S., aged 23 years, para 1, had a Cu-T-380 device inserted in the Irwin Hospital, New Delhi on 30-9-75, 6 weeks after a normal delivery; there was no difficulty in insertion. On her first follow up visit 7 weeks later, she complained of lower abdominal pain off and on. On speculum examination the threads of the device were not seen. Hysterosalpingography showed the inverted Cu-T in the right iliac fossa outside the uterine cavity (Fig. 1). On 2-2-76, she had an acute attack of lower abdo-

minal pain and 2 bouts of vomiting. Vaginal examination revealed a normal sized, anteverted uterus. Left fornix was clear, but there was a tender, cystic mass 1" in diameter high up in the right fornix. On laparotomy the right broad ligament was found to be oedematous and the Cu-T could be felt through the posterior leaf. The enlarged and cystic right ovary was adherent to the posterior layer of the broad ligament and the ampullary portion of the tube was bound down by adhesions to a loop of large bowel. In attempting to separate the tubal adhesions, the arm of the Cu-T was extruded and the device was easily extracted. The adhesions with the bowel were carefully separated, and haemostasis secured. On careful exploration it was found that the device had perforated through the right postero-lateral wall of the uterus near the isthmus.

Case 3

Mrs. S., a 22 years old para 2, had insertion of Cu-T-200 device at a New Delhi Hospital on 20-3-76. The insertion was done without difficulty in a normal-sized anteverted uterus on the 9th day of the menstrual cycle, 2 months after last child birth. On her first follow up examination a week later, she had no complaints, but the threads of the device were not seen on speculum examination. Vaginal examination revealed tenderness in the posterior fornix. Hysterosalpingogram confirmed that the Cu-T was lying outside the uterine cavity. Laparotomy was done on 15-4-76. The uterus was normal sized, anteverted, but was adherent to the left broad ligament and large bowel. In trying to separate the adhesions, the Cu-T device was extruded. Adhesions were separated and haemostasis achieved. On inspection, a small perforation was seen on the left side of the posterior wall of the uterus just above the level of the isthmus. There was also an old healed perforation on the posterior wall of the uterus near the fundus.

Discussion

Uterine perforation can occur as a result of faulty insertion by which the device is pushed into or through the uterine wall. Such perforations are termed "primary perforations". Less commonly perforation can also be due to displacement of the device by the forces of uterine contraction i.e. "Secondary perforation".

The Copper-carrying devices-T, 7 and Y—are "open" devices with 3 pointed ends, are shaped so as to afford wider fundal placement and physiologically adapt to uterine cavity to reduce the incidence of pain, bleeding and expulsion. To enhance contraceptive effectiveness, Copper has also been added to the horizontal as well as vertical arms of the device. This adds to the safety of the device from expulsion, but increases the hazard of perforation due to rigid pointed ends.

Most perforations with copper bearing devices are "Secondary perforations" caused by uterine contractions forcing the stem of the device into the cervical tissue when the angle between the body and cervix is too sharp. Lehfeldt and Wan (1971), Rienprayura *et al* (1973), Williamson and Krikland (1974), and Cederquist *et al* (1975) have all reported this type of perforation with Copper-T devices. Landesman *et al* (1973) have shown that not only the stem, but also the pointed ends of the horizontal bar of the T may perforate uterine muscle. It is interesting to note that this type of perforation is almost unknown with the Cu-7 device. This may be explained by the horizontal bar of the Cu-7 being curved to fit the fundal contour and devoid of copper rendering this part less rigid.

In all the 3 cases presented the devices were inserted in lactating women where the uteri being hyperinvolunted were more vulnerable to perforation.

In the first case, it is possible that the horizontal arm of the device was forced by uterine contractions, and was followed by the rest of the device in between

the layers of the broad ligament. This explains the fortuious absence of adhesions which are so common with Copper bearing devices. In the other 2 cases, the acute flexion of the uterine body on the cervix, and discovery of the site of perforation on the posterolateral wall close to the isthmus suggested "primary perforation" at the time of insertion of the device. In both these patients, there were symptoms of lower abdominal pain and vaginal tenderness with adhesions to broad ligament and large bowel.

The true incidence of perforation with copper bearing devices is difficult to ascertain in the absence of adequate follow up. Gupta *et al* (1975) reported 1 case of uterine perforation with Cu-T in a total of 475 insertions. In our hospital 415 insertions have been made from January, 1975 to December 1976 with 1 case of perforation (Case 2). The increased rate of perforation with Copper bearing devices as compared to the conventional Lippes loop would therefore mean that in developing countries like India, where adequate follow up is not possible Copper bearing devices are not the ideal intra uterine device.

Acknowledgement

We thank Dr. S. K. Lal, Dean, Maulana Azad Medical College, New Delhi, for permission to publish this paper.

References

1. Cederquist, L. L., Lindhe, B. and Fuchs, F.: Acta. Obst. & Gynec. Scand. 54: 183, 1975.
2. Gupta, I., Dhall, K. and Devi, P. K.: J. Obst. & Gynec. India. 25: 428, 1975.
3. Landesman, R., Kaye, R. E. and Wilson, K. H.: Contraception. 7: 477, 1973.
4. Lehfeldt, H. and Wan, L. S.: Obst. & Gynec. 37: 826, 1971.
5. Nakamoto, M. and Buchman, M. I.: Am. J. Obst. & Gynec. 94: 1073, 1966.
6. Rienprayura, D., Phaosavdasdi, S. and Somboonsuk, A.: Contraception. 7: 515, 1973.
7. Tatum, H. J.: Am. J. Obst. & Gynec. 117: 602, 1973.
8. Williamson, H. O. and Kirkland, B. T.: Presentation at 12th Annual Meeting of Planned Parenthood Physicians, Memphis, Tennessee, April 16, 17, 1974.

See Fig. on Art Paper V