

## CONE BIOPSY IN PREGNANCY\*

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### SUMMARY

*A retrospective analysis of all cone biopsies performed on pregnant patients at Groote Schuur Hospital from 1965 to 1969 is presented. The study showed that a significantly high maternal complication rate and foetal wastage was associated with the procedure. It is recommended that the procedure be abandoned in pregnancy and the abnormal cervical cytology be investigated at the end of the puerperium.*

Cone biopsy is a widely accepted diagnostic procedure in patients with positive Papanicolaou smears. It affords the opportunity to exclude invasive carcinoma of the cervix.

In pregnancy this procedure is associated with additional hazards to the mother and foetus, and possibly to future childbearing. These hazards include operative and secondary haemorrhage, abortion and premature labour.

In surveying the recent literature, it has become apparent that there is no unanimity of opinion as to whether cone biopsy should be performed in pregnancy. Controversy also rages concerning whether routine Papanicolaou smears should be taken in pregnancy. Likewise there is no agreement on what treatment should be given if and when carcinoma *in situ* is found in pregnancy.

The studies of Greene and Peckham<sup>1</sup> allayed the concern that the physiological alterations in the cervical epithelium during pregnancy may mimic dysplasia and carcinoma *in situ*. The accuracy of cytological diagnosis of the abnormal cervix in pregnancy is also no longer in question following the work of Mussey and Decker.<sup>2</sup>

### Cervical Smears

Most authors are in agreement that routine smears are an essential part of antenatal care. The need for screening increases proportionally with the age and parity, and the lower the socio-economic status of the patient.

Notable authorities, however, do not accept this premise. These include Kottmeir<sup>3</sup> who stated that he personally did not consider routine smears to be indicated in all pregnant women, and Randall<sup>4</sup> who said that 'although we can recognize carcinoma *in situ* of the cervix through routine screening during pregnancy, this does not warrant what is involved psychologically, economically and practically'. Green and Donovan<sup>5</sup> have again questioned the need for and treatment of carcinoma *in situ* and the effectiveness of cytological screening programmes.

### Punch Biopsies

It is generally accepted that multiple punch biopsies are inadequate for the complete evaluation of the extent of cervical atypia and it has been shown repeatedly that random biopsies can easily miss the most significant lesions.<sup>6</sup>

Other authors<sup>7</sup> have repeatedly stated that multiple punch biopsies during pregnancy are just as informative as cone biopsies and are associated with fewer maternal

and foetal complications. Kaplan and Kaufman,<sup>8</sup> however, have under experimental conditions measured the blood loss in several patients from whom multiple punch biopsies were taken, and noted that the blood loss was greater than with conization.

### Colposcopy and Colpomicroscopy

At the present time colposcopy and colpomicroscopy are research tools, except in the hands of enthusiasts. The appropriate place of colposcopy and colpomicroscopy appears not to be in the screening programme, but as an adjunct in the assessment of a patient with known abnormal smears. In this context it can guide biopsies so that the cervix can be accurately assessed without conization. This is of particular value in the pregnant patient.

### Cone Biopsy

Ferguson and Brown<sup>9</sup> and Villasanta and Durkan<sup>10</sup> are of the opinion that cone biopsy in pregnancy is of little risk to the mother and the foetal loss directly attributable to the procedure is low. Bottomy and Boyd<sup>11</sup> state that despite some increased hazards, conization of the cervix is justified if carcinoma *in situ* is present in the punch biopsy specimen. Mussey and Decker<sup>2</sup> from the Mayo Clinic feel that the presence of repeated suspicious and positive smears in pregnancy should be followed by immediate conization. They also suggest that cautery should be employed in obtaining haemostasis as the incidence of residual carcinoma *in situ* is lower in cervixes thus treated.

However, the viewpoint stated by Rogers and Williams<sup>12</sup> and supported by other workers<sup>13</sup> that routine and immediate conization when repeated suspicious Papanicolaou smears are found in pregnancy is a form of management which should be challenged, studied and revised is rapidly gaining acceptance. In their series of 72 antepartum cone biopsies, 19.4% of the babies were lost and 17.4% had severe perinatal complications; an immediate complication rate of 20.8% was noted in the mothers and 29.3% had delayed complications following the cone biopsy.

Daskal and Pitkin,<sup>14</sup> reporting on 77 cone biopsies in pregnancy, came to very similar conclusions and stated that it seemed dubious whether cone biopsy could be justified in all or most patients with abnormal cervical smears in pregnancy.

The present study was undertaken to evaluate the possible advantages and disadvantages of cone biopsy in pregnancy and to clarify the indications for this procedure.

### MATERIAL AND METHODS

Twenty cone biopsies were performed in pregnancy during the period of January 1965 to December 1969 at Groote Schuur Hospital. These 20 cases were retrospectively analysed. The average age of the patients was 29.9 years. The youngest patient was 22 years of age and the oldest 43 years. Of these patients 15% were Whites, 2 (10%) were Bantu and the remaining 15 (75%) were Coloured. This representation is comparable to the percentage of

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patients in the respective racial groups attending the hospital clinics. All patients were multiparous and the gravidity ranged up to 11.

#### Indications for Cone Biopsy

The indications for cone biopsy were the finding of two or more positive or doubtful cervical smears in pregnancy. The doubtful smears were repeated following treatment of any associated infection or inflammation.

Eighteen (90%) of the patients were asymptomatic and were found on routine screening at their first antenatal attendance. Two patients complained of postcoital bleeding and although the cervix was macroscopically healthy the Papanicolaou smears were positive for malignancy.

Four patients (20%) underwent cone biopsy during the first trimester and the remaining 16 (80%) in the second trimester of pregnancy. No conizations were performed in the last trimester.

#### Operative Technique

There was no uniformity of operative technique. Shirodkar sutures alone or in combination with lateral or Sturmdorff sutures were inserted in 7 cases. Sturmdorff sutures and modifications were utilized in the remaining 13 cases. All the severe primary and secondary haemorrhages occurred in this latter group of patients.

### RESULTS

#### Maternal

There were no maternal deaths. Primary haemorrhage was controlled by one of the operative techniques described. Bleeding severe enough to warrant transfusion occurred in one case. Secondary haemorrhage occurred in 3 cases. Control was established in 2 by vaginal packs, together with blood transfusions, while the third case, complicated by sepsis, required caesarean hysterectomy to control the haemorrhage following administration of 16 units of blood. This patient had undergone a previous cone biopsy. All the secondary haemorrhages occurred during the second postoperative week.

Other maternal complications included two patients who sustained severe cervical lacerations when delivery occurred with a Shirodkar suture *in situ*.

Two patients had conceived subsequent to conization. They were delivered of premature infants weighing 2 200 g and 2 150 g respectively. In the first instance the patient had previously delivered 2 premature infants, but in the latter case 4 previous pregnancies had resulted in full-term infants.

#### Foetal Results

Five patients (25%) aborted. Six patients (30%) delivered premature infants and 8 patients (40%) were delivered at term, 3 by elective caesarean section. Six foetuses died: these included 5 abortions and the foetus lost following hysterectomy at 20 weeks performed on the patient with severe secondary haemorrhage as previously described. The total foetal loss in the series was thus 30%.

#### The Effect of Shirodkar Suture

Fifty-seven per cent (4/7) of the patients who had a Shirodkar suture inserted delivered infants at term, while 14% aborted and 28% went into premature labour.

This contrasts with the patients with Sturmdorff sutures, a third of whom aborted, a third went into premature labour and the remaining third delivering at term.

#### Histopathology of the Cone Biopsies

The histopathology of the biopsy specimens showed carcinoma *in situ* in 18 out of 20 cases. No cases of invasive carcinoma were found. One case was diagnosed as chronic cervicitis with hyperplasia of the cervical epithelium, showing basal-cell hyperplasia and dysplasia, while in the remaining specimens no abnormality could be detected.

Follow-up studies in the 18 cases of carcinoma *in situ* have shown that the cervical smears have remained negative in 13 cases, on twice-yearly examination for a period of 1-4 years. Positive cervical smears recurred in 5 cases, 4 of whom have subsequently undergone total abdominal hysterectomy with the excision of a cuff of vagina. A further patient has undergone repeat cone biopsy and been advised to undergo hysterectomy for extensive carcinoma *in situ*.

Residual carcinoma *in situ* following cone biopsy in pregnancy has been demonstrated histologically in 4 of 18 cases. The incidence of residual carcinoma *in situ* following cone biopsy in pregnancy is thus 22.2%.

### DISCUSSION

Cervical smears in pregnancy are accepted practice in contemporary obstetrical care. They serve to introduce the concept of cancer prophylaxis to the majority of women, many of whom are attending a gynaecologist or undergoing a thorough medical examination for the first time in their lives.

The finding of repeatedly positive Papanicolaou smears in pregnancy presents problems to clinician, cytologist and pathologist. The clinician must weigh the advantages of attempting to obtain a definitive diagnosis against the risks to both mother and unborn child. Cytologically the appearance of a Papanicolaou smear in pregnancy may be altered by a host of variable factors. These include infection, folate deficiency, cervical dysplasia, chronic cervicitis, carcinoma *in situ* and invasive carcinoma of the cervix.

The findings in the present study confirm that cone biopsy during pregnancy will enable the clinician to exclude invasive disease of the cervix and to make a positive diagnosis of carcinoma *in situ*. The value of this positive identification during pregnancy is questionable. The risks accompanying cone biopsy in pregnancy are high. Fifteen per cent of the patients had severe secondary haemorrhage and one patient required emergency hysterectomy to control the haemorrhage. Thirty per cent of the foetuses died. The abortion rate was 25% and 30% of the patients went into premature labour. Only 40% of patients eventually delivered at term.

A definite diagnosis of carcinoma *in situ* influenced the obstetrical management in only 3 patients who were delivered by elective caesarean section; the remaining 5 patients were allowed to deliver spontaneously at term. When cone biopsy in pregnancy is viewed in the light of the subsequent postpartum management of the cervical lesion, the residual carcinoma *in situ* rate of 22%

becomes highly significant. This high rate of failure to remove the lesion entirely must be added to the foetal loss and maternal complication rate when this procedure is being contemplated in pregnancy.

If a cone biopsy is to be performed in pregnancy, some consideration should be given to the technical aspects of this procedure. The insertion of a Shirodkar suture before removal of the cone is associated with less haemorrhage and abortion and significantly higher term delivery rate than Sturmdorff or mattress sutures. It is difficult to evaluate the effect of cone biopsy in pregnancy as regards future fertility. Two of a possible 12 patients have subsequently fallen pregnant, one of whom developed cervical incompetence.

Therefore the only value of cone biopsy in pregnancy was to exclude invasive carcinoma of the cervix. A positive diagnosis of carcinoma *in situ* of the cervix did not significantly alter the management of the cervical lesion during that particular pregnancy, but the cone biopsy was associated with a significantly high maternal complication rate and a tremendously high foetal loss.

#### CONCLUSION

Routine Papanicolaou smears are of value in pregnancy in that they alert clinicians to the presence of an abnormal cervical lesion.

Because of the high risks associated with cone biopsy in pregnancy, this procedure should be abandoned, and the investigation of a positive Papanicolaou smear be delayed until the end of the puerperium in those cases where the cervix appears *macroscopically* healthy.

A cone biopsy during pregnancy should only be undertaken where the cytological picture is highly suggestive of invasive carcinoma or where a suspicious lesion is macroscopically evident. In these cases a Shirodkar suture should be inserted immediately before removal of the cone.

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#### REFERENCES

1. Green, R. and Peckham, B. (1948): *Amer. J. Obstet. Gynec.*, **75**, 551.
2. Mussey, E. and Decker, D. (1967): *Ibid.*, **97**, 30.
3. Kottmeier, H. L. (1960): International Correspondence Society of Obstetricians and Gynaecologists, **1**, 19.
4. Randall, A. (1960): Paper read at a meeting of the Chicago Gynecological Society.
5. Green, G. H. and Donovan, J. W. (1970): *J. Obstet. Gynaec. Brit. Cwilt.*, **77**, 1.
6. Shulman, H. and Ferguson, J. (1962): *Amer. J. Obstet. Gynec.*, **84**, 1497.
7. Editorial (1969): *Obstet. Gynec. Surv.*, **24**, 50.
8. Kaplan, A. and Kaufman, R. (1967): *Clin. Obstet. Gynec.*, **10**, 871.
9. Ferguson, J. H. and Brown, G. (1960): *Surg. Gynec. Obstet.*, **111**, 603.
10. Villasanta, U. and Durkan, J. (1966): *Obstet. and Gynec.*, **27**, 717.
11. Bottomy, J. R. and Boyd, R. A. (1961): *Sth. Med. J. (Bgham, Ala)*, **54**, 584.
12. Rogers, R. and Williams, J. (1967): *Amer. J. Obstet. Gynec.* **98**, 488.
13. Daskal, J. and Pitkin, R. (1968): *Obstet. and Gynec.*, **32**, 1.