CERVICAL RUPTURES IN MIDTRIMESTER ABORTIONS

by

R. RAJAN, M.B.B.S., M.D., D.G.O.

and

K. R. USHA,** M.B.,B.S.

It is generally agreed that a significant traumatic complication rate accompanies midtrimester abortions done by any method. Rupture of the uterus and cervical injuries have been reported after amnioinfusion of hypertonic glucose, saline, urea and prostaglandin F_2 alpha and its methyl analogue (Table I). Two classes of patients appear to be in jeopardy following termination procedures: the older multiparous women at risk for uterine ruptures and young primigravid women at risk for cervical ruptures. Obviously, since incidence of midtrimester abortions is on the increase, these complications are encountered more frequently.

By the selective use of abortifacient agents, and by avoiding amnioinfusions and intravenous oxytocin in grandmultiparous women, we could effectively avert the problem of rupture uterus (Rajan, 1978). We prefer to treat grandmultiparous women with serial intramuscular injections of 15-Methyl Prostaglandin F_2 alpha, either alone or as augmenting agent for catheter method of induction. However, inspite of the development of different technics, our incidence of cervical ruptures continues to be distressingly high. Our experience with various types of cervical injuries sustained following different methods of midtrimester abortion forms the basis of this communication.

Incidence of Cervical Rupture

Beginning in May 1974, during the last 4 years, 780 women underwent midtrimester abortion by various technics (Table II). Among them 12 patients had sustained cervical injuries, giving an incidence of 1.5 per cent. But for the practice of routine inspection of the cervix in all subjects, at least 9 cases of cervical injuries might have been missed as they were symptom free. Since all the injuries were detected immediately following abortion, suturing of the tear could be effected without any delay, through the vaginal route without much difficulty. This we believe, will prevent any fistulae formation or any obstetric problem in the future.

Type of Rupture: Of the 12 patients with cervical rupture, the injury was located in the posterior lip of the cervix in 11 patients. Partial annular detachment of the cervix, otherwise transverse cervical tear located nearer to the fornix and away from the external os was the commonest type of rupture detected in 5 patients. The external os was closed in all these cases and the foetus and placenta had escaped through the rent in the cer-

*Department of Obstetrics and Gynaecology.
**Senior Research Fellow, I.C.M.R.
Medical College Hospital, Kottayam, 686 008, Kerala.

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TABLE I

Traumatic Complications of Midtrimester Abortions

Author	Year	Technic employed	Type of trauma	Number reported
Swane, Hans	1960	Hypertonic saline extra-ovular	Transverse cervical tear	—
Skaaja	1961	—	Transverse cervical tear	7
Goodlin	1969	Hypertonic saline intraamniotic Oxytocic augmentation	Lower segment rupture of uterus	1
Berk *et al*	1971	Hypertonic saline intraamniotic	Posterior cervical tear	2
Gordon	1972	Hypertonic saline intraamniotic Oxytocic augmentation	Posterior cervical tear	1
Goodlin *et al*	1972	Hypertonic saline intraamniotic	Cervical fistula posterior lip	4
Hortwitz	1974	Hypertonic saline intraamniotic Oxytocic augmentation	Rupture uterus	1
Willems	1974	Hypertonic saline intraamniotic	Transverse cervical tear	2
Duenholter and Gant	1975	Prostaglandin $F_2 \alpha$ intraamniotic	Cervical tear Rupture uterus	4 1
Wellman and Jacobson	1976	Urea & PG $F_2 \alpha$ intraamniotic	Lateral cervical tear	1
Proppling *et al*	1977	Intraamniotic PG $F_2 \alpha$ Oxytocin & Tent	Rupture uterus	2
Rajan and John	1978	15-me-PG F_2 alpha intraamniotic & oxytocic augmentation	Rupture uterus	1
		Urea-intraamniotic & oxytocic augmentation	Rupture uterus Transverse tear Cx	1 1
		Extraovular Rivanol	Posterior vertical tear of the cervix	1

vix. Vertical tear of the posterior lip of the cervix, almost extending to the fornix was the next common type of rupture seen in 4 patients. In the remaining 3 patients there were only minor cervical lacerations.

Effect of Parity: Cervical injuries were predominently a complication of nulliparous women, and in this series, 11 cases were in nulliparous women between the age of 16 to 25 years. The 1 parous woman who sustained an injury had only minor cervical lacerations of the posterior lip. While the overall incidence is only 1.5 per cent, the incidence of cervical tear for 335 nulliparous women is as high as 3.3 per cent (Table III).

TABLE II
Midtrimester Abortion with Various Pharmacological Agents
(May 1974 to April 1978)
(780 patients

Method of Induction	Augmenting agent	No. of patients	Percentage
Intraamniotic urea	nil	226	29.00
Intraamniotic urea	Intravenous oxytocin	109	14.00
Extra-ovular rivanol	Spartine Sulphate	101	12.90
Intraamniotic saline	nil	88	11.30
Intramuscular 15-me-PG F_2 α	nil	87	11.20
Extra-ovular catheter	Intramuscular 15-me-PG F_2 α	75	9.60
Intraamniotic urea	Intramuscular 15-me-PG F_2 α	50	6.40
Manitol—Intraamniotic	nil	24	3.00
Intramuscular 15-me-PG F_2 α	nil	20	2.60

TABLE III
Cervical Injuries as Related to Parity

Type of patients	Number of patients	Number of cervical tear	Percentage
Nulliparous women	335	11	3.30
Parous women	445	1	0.22
All patients	780	12	1.50

Effect of Gestational Age: Eventhough the number of patients undergoing pregnancy termination between 13 and 15 weeks were only 70, there were no cervical ruptures in this group. Probably the potentiality for cervical rupture is more with advanced duration of gestation.

Effect of Termination Procedure: Table IV). Of the 226 patients aborted by intraamniotic urea, 5 patients developed cervical ruptures. In the group of 109 patients where concomitant oxytocic augmentation was tried along with intraamniotic instillation of urea there was 1

TABLE IV
Cervical Injuries as Related to the Method of Induction

Method of abortion	Nature of cervical rupture	Number
Intraamniotic urea	Transverse cervical rupture	5
Intraamniotic urea and Pitocin augmentation	Vertical tear of cervix	1
Intraamniotic urea and Intramuscular 15-me-PGF_2a	Small cervical lacerations	2
	Vertical tear of cervix	1
Extra-ovular catheter and intramuscular 15-me-PGF_2a	Vertical tear of cervix	1
	Small cervical lacerations	1
Extra-ovular Rivanol	Vertical tear of cervix	1
Total cervical injuries:		12

rupture. There were more number of ruptures in patients aborted with intra-amniotic urea and serial intramuscular 15-me-PG F_2 alpha combination, 3 ruptures occurring in 50 terminations. In the catheter-prostaglandin group there were 75 patients, and of them there were 2 ruptures. Among the 101 patients treated with extra-ovular rivanol, 1 patient sustained cervical injury. There were no cervical injuries when intramuscular prostaglandin alone was employed for induction of abortion, and the incidence of cervical tear was same for the extra-ovular procedures and intra-amniotic procedures (Table V), and was equally divided between these two technics.

TABLE V

Route of Administration of Agent and Cervical Tear

Route of administration	No. of cases	No. of cervical tear	Percentage
Intraamniotic procedures	517	9	1.70
Extra-ovular procedures	176	3	1.70
Intramuscular 15-me-PG F_2 α	87	nil	—

Effect of Oxytocic Augmentation: While concomitant oxytocic augmentation was not employed in all patients, many patients aborted by different technics had oxytocic angmentation when labour was not established within a reasonable period. Only 5 of the 12 patients who had cervical tear were treated with intravenous oxytocin. Among those 5 patients, 1 had concomitant oxytocic induction and in the rest, oxytocin was used only after 20 hours of the primary method of induction. From these observations we see no correlation between the incidence of cervical rupture and oxytocic augmentation. However, the incidence of cervical injuries were more in situations where combined methods such as Intraamniotic urea and intramuscular PG, or extra-ovular catheter and intramuscular PG were practised (Table IV).

Induction-Abortion Time and Incidence of Cervical Rupture: Considering cervical injuries as mainly a problem of nulliparous women, we calculated the mean abortion time for nulliparous women (aborted by different methods) and compared that with the mean abortion time of nulliparous women who sustained cervical injuries. There was no difference in the figures in either group, suggesting that quick induction per sé did not increase the chance for cervical injury. This is substantiated by the fact that only 46 per cent of the patients with cervical injuries had aborted within 24 hours, whereas among the entire series of nulliparous women 64 per cent had aborted within 24 hours (Table VI).

TABLE VI

Induction-Abortion Time and Incidence of Cervical Rupture

Particulars	Induction-to-abortion interval	
	Mean	Range
Total nulliparous women	28 hrs. 40 mts.	5 hrs. to 68 hrs.
Nulliparous women who had cervical tear	29 hrs. 00 mts.	12 hrs. to 48 hrs.

Role of Laminaria Tent: To obtain easy dilatation and to prevent cervical injuries, in 12 nulliparous women induced by different methods, laminaria tent was placed in the cervical canal at the time of induction. Inspite of this precaution, 1 patient had a big vertical tear of the posterior lip of the cervix. This denotes the doubtful role of laminaria in preventing the occurrence of cervical injuries in midtrimester procedures.

Immediate Complications: Of the 12 patients with cervical ruptures bleeding from the torn edges was seen in only 1 patient. The bleeding was arrested by suturing the cervix and the patient was transfused with a bottle of blood. On 2 occasions the torn edges of the cervical tissue were hanging out, and the rent was repaired after excising the necrosed tissue. Except for these 3 cases, cervical tear was generally asymptomatic and was detected by the routine inspection of the cervix following completion of abortion.

Discussion

Severe damage to the cervix following intraamniotic procedures has been well documented in the literature, with the reported incidence ranging from 0.2% (Proppling, 1977) to 3.3% (Duenhoelter and Gant, 1975). By employing intraamniotic, extra-ovular and intramuscular procedures in 780 subjects, we found that cervical injuries occur at a rate of 1.5 per cent. Eventhough this complication was not associated with intramuscular administration of 15-me-PG F_2 alpha, Intraamniotic and extraovular methods had equal potentiality for cervical injuries.

It has been suggested that cervical injuries are more commonly encountered when oxytocic augmentation is practised (Willems, 1974). But our findings do not favour this view, as the role of oxytocin could be established only in 5 out of the 12 cervical ruptures. However, combined method of induction of abortion appears to be a major incriminating factor as evidenced by 3 of the 50 patients aborted by urea-prostaglandin combination and 2 of the 75 patients aborted by catheter-prostaglandin combination sustaining cervical injuries. But there is no evidence to prove that the tendency for cervical lacerations is increased by hastening labour and reducing the induction-to-abortion interval. The mean abortion time for nulliparous women who did not have cervical injury is not significantly different from that of the nulliparous women who had cervical injuries. Moreover, while 64 per cent of the nulliparous women had aborted within 24 hours, only 46 per cent of the nulliparous women with cervical injuries had aborted within 24 hours.

Cervical rupture is predominently a problem of nulliparous women. Whether these injuries are due to a form of hypertonic inco-ordinate uterine action, a congenital anatomic weakness or primary cervical dystocia is uncertain. Many (Willems 1974 and proppling *et al* 1977) have advocated packing the cervical canal with laminaria tent before amnioinfusion, to overcome the problem of damage to cervix. Nevertheless, our experience with laminaria dilatation is far from satisfactory. We have used laminaria tent in 12 patients, and among them 1 patient sustaied a deep vetical tear of the posterior lip of the cervix. Thus, inspite of the different modifications of the abortion technics, the risk of cervical damage could not be eliminated.

If the cervical lacerations go unnoticed, it would increase the obstetric risk in the subsequent pregnancies including chance of spontaneous uterine rupture in a subsequent pregnancy; also chance of cervi-

cal fistula is high if the tear is not detected and properly sutured. Possibility for missing cervical ruptures is high because it is uncommon for the torn edges of the cervix to bleed and bring the injury to notice. Quite often, in the transverse cervical rupture the foetus and the placenta escape through the rent than through the external cervical os. After the expulsion of the products the rent with avascular necrosed edges evades detection.

Our practice is routine inspection of the cervix in all the patients after completion of abortion. This meticulous approach has enabled prompt detection of cervical lacerations even if they are asymptomatic. Only 3 patients in our series had signs of cervical injury; in 2 patients the torn edges of the cervix could be seen out side, and the third patient had profuse bleeding. In the 9 patients who had no symptoms, the cervical tear could have been easily missed but for the routine examination of the cervix.

Another interesting observation made in our study is that cervical ruptures did not occur in women who were aborted between 13 and 15 weeks of gestational age. Eventhough the number of women aborted in this period was only 70, this observation appears to be significant. High failure rate, difficulty in amniocentesis, greater incidence of incomplete abortion and prolonged abortion time are the different problems associated with induction of abortion between 13 and 15 weeks of gestation. But, as reported, if traumatic complications are absent this period will be a safer time to practice midtrimester inductions. Other complications mentioned can be overcome by employing suitable methods of induction, such as serial intramuscular injection of 15 me PG F_2 alpha.

Conclusion

Overall incidence of cervical rupture for midtrimester abortion induced by various pharmacological agents is 1.5 per cent. It is mainly a problem of nulliparous women. Intraamniotic and extra-ovular methods have equal share in producing cervical injuries. Combined method of induction seems to have a greater potentiality for damaging the cervix. But oxytocic augmentation does not appear to increase the incidence. There is no evidence to believe that women with shorter induction-abortion interval have a greater incidence of cervical lacerations.

Even after using laminaria tents cervical lacerations could not be avoided. Thus none of the presently available methods offers any protection against cervical injuries. Since cervical ruptures can go unnoticed and produce future obstetric problems, the importance of routine inspection of cervix in all patients is stressed. It may be that cervical injuries can be prevented if midtrimester abortions are undertaken between 13 and 15 weeks of pregnancy.

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