

Extraperitoneal Lower Segment Caesarean Section for Infected Cases

A REAPPRAISAL

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SUMMARY

The relative merits of intraperitoneal and a modified extraperitoneal lower segment Caesarean section were studied in 412 septic cases requiring Caesarean section.

Our modified technique of extraperitoneal Caesarean section is clearly shown to be far safer than the customary intraperitoneal operation for septic cases requiring Caesarean section. The benefits of the extraperitoneal approach in septic cases are: (a) the risk of maternal death was reduced about 5-fold; (b) the risk of post-operative septicaemic shock was reduced about 8-fold; generalised peritonitis, about 4½-fold; pelvic abscess, about 14-fold; and the need for further surgery, about 2½-fold; (c) the risk of late secondary haemorrhage was reduced about 4-fold.

The risk of superficial abdominal wound sepsis was slightly increased.

As opposed to other techniques of extraperitoneal Caesarean section, the modified technique employed in this series did not result in any additional risk of haemorrhage or injury to the bladder at operation, in comparison with the intraperitoneal technique, even in the hands of junior staff. The operating time was lengthened by about 3 or 4 minutes.

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The Obstetric Unit at King Edward VIII Hospital in Durban serves primitive rural people from a large area. Many patients in obstructed labour are admitted annually, the membranes having been ruptured for many hours, often for more than 2 days. Gross infection is common and the fetus is frequently dead *in utero*, with the presenting part too high, and jammed in a contracted pelvic brim, to permit safe delivery *per vaginam*, even by destructive operation. In these circumstances, Caesarean section is necessary; but rapidly-spreading generalised peritonitis, septicaemia, and even death, are complications which ensue with dreaded frequency.

This distressing situation stimulated a review of extraperitoneal Caesarean section in the hope of reducing

these risks in our unit, in 1966. The accepted methods of extraperitoneal Caesarean section were tried, but discarded as unsuitable, because they were technically too difficult and time-consuming. On the other hand, the compromise of entering the peritoneal cavity first, and thereafter closing it effectively before proceeding with the lower-segment Caesarean section, was found to facilitate the operation greatly. The technique evolved is described in a previous publication.¹

A thorough appraisal, therefore, of the possible advantages and limitations of such an approach in septic cases, when performed by junior as well as senior staff, was regarded as important. Consequently an extensive trial of the relative merits of intra- and extraperitoneal Caesarean section in septic cases was undertaken and our results and conclusions are presented.

DETAILS OF THE TRIAL

The trial involved 412 Black and Indian patients requiring Caesarean section, who had intra-uterine infection. Two hundred and thirty-nine intraperitoneal lower segment Caesarean sections were performed upon patients whose admission numbers were odd, and 173 extraperitoneal Caesarean sections were performed upon patients with even numbers, employing the simple technique already described.

Initially senior members of the staff undertook the surgery, but soon both senior and junior registrars operated in order to evaluate the relative merits of the two methods of Caesarean section, in both experienced and less experienced hands.

The offending bacteria were cultured and their sensitivity to antibiotics determined in all cases from swabs taken from the liquor amnii at the time of section. The patients were given Penbritin while awaiting bacteriological results. Later during the trial, 2 g kanamycin in a litre of normal saline was employed to lavage the peritoneal cavity or the extraperitoneal space, in the two types of Caesarean section.

In all cases the time from anaesthetic induction to delivery was recorded, and the state of the baby noted. After delivery, urinalyses and X-ray examinations of the chest were made to help exclude the possibility of urinary tract and pulmonary infections being responsible for the pyrexia. The patients' temperatures were recorded every 4 hours until the patients' discharge from hospital. The

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duration of pyrexia and hospital-stay was recorded for each patient.

The patients were carefully and frequently examined for pelvic peritonitis, pelvic abscess, generalised peritonitis, wound sepsis, wound rupture, septic shock, and secondary postpartum haemorrhage. Cervical swabs were sent for bacteriological analysis on alternate days to detect any changes in bacterial flora.

RESULTS OF THE TRIAL

Average Time of Anaesthetic Induction to Delivery

Although the time from induction of anaesthesia to delivery was longer when extraperitoneal Caesarean section was performed (8-15 minutes) in comparison with the intraperitoneal method (6-10 minutes), the average difference was only 3-4 minutes.

Duration of Pyrexia after Caesarean Section

The number of patients with pyrexia of more than 10 days' duration is shown in Table I.

TABLE I. PYREXIA LASTING MORE THAN 10 DAYS

Caesarean section	No. of patients	%
Intraperitoneal	72	30,13
Extraperitoneal	22	12,71

Hospital Stay

The hospital stay was less after extraperitoneal Caesarean section than after intraperitoneal Caesarean section (Table II). Thus, 66,54% of patients who had an extraperitoneal Caesarean section left hospital within 10 days, whereas only 26,87% who had the intraperitoneal section left hospital within 10 days. Further, only 9,7% who had extraperitoneal Caesarean sections, were hospitalised for more than 20 days; whereas 16,3% who had intraperitoneal sections, stayed for more than 20 days.

TABLE II. HOSPITAL STAY

Caesarean section	Discharged within	Discharged within
	10 days	20 days
Intraperitoneal	64 (26,87%)	195 (83,70%)
Extraperitoneal	114 (66,54%)	166 (90,3 %)

Incidence of Generalised Peritonitis

The risk of generalised peritonitis after intraperitoneal section performed in the presence of intra-uterine infection was about 5 times that encountered after extraperitoneal section (Table III).

TABLE III. INCIDENCE OF GENERALISED PERITONITIS

Caesarean section	No. of patients	%
Intraperitoneal	39	16,3
Extraperitoneal	9	3,5

Incidence of Pelvic Abscess

The risk of pelvic abscess after intraperitoneal section done in the presence of intra-uterine infection was far greater (about 14 times) than it was after the extraperitoneal section (Table V).

TABLE IV. INCIDENCE OF PELVIC ABSCESSSES

Caesarean section	No. of patients	%
Intraperitoneal	39	16,3
Extraperitoneal	2	1,2

Incidence of Abdominal Wound Sepsis

As shown in Table V the incidence of sepsis in the abdominal incision was slightly greater after extraperitoneal section. In the majority of cases the sepsis was not severe, but prolonged the stay in hospital. In each group, 10 patients needed secondary repair of the wound which did not involve the rectus sheath. In one case, complete wound rupture occurred after an intraperitoneal section.

TABLE V. INCIDENCE OF ABDOMINAL WOUND SEPSIS

Caesarean section	No. of patients	%
Intraperitoneal	63	22,2
Extraperitoneal	47	27,2

Incidence of Secondary Postpartum Haemorrhage

Secondary postpartum haemorrhage occurred in 13 cases in this study; 11 after the intraperitoneal section, and 2 after the extraperitoneal type. These patients required evacuation of septic clots and retained products of conception. Uncontrollable haemorrhage necessitated hysterectomy after intraperitoneal section in 4 cases and after the extraperitoneal type in 2 patients (Table VI).

TABLE VI. INCIDENCE OF SECONDARY POSTPARTUM HAEMORRHAGE

Caesarean section	No. of patients	%
Intraperitoneal	11	4,6
Extraperitoneal	2	1,2

Incidence of Further Surgery

Further surgery was necessary in 25,1% of cases after intraperitoneal section, and in only 9,3% of cases after extraperitoneal section. The details are listed in Table VII.

TABLE VII. INCIDENCE OF FURTHER SURGERY

Further surgery	Intraperitoneal CS	Extraperitoneal CS
Secondary suture abdominal wound	12 (5,1%)	13 (7,5%)
Secondary suture: burst abdomen	1 (0,4%)	0 (0%)
Colpotomy drainage	39 (16,3%)	2 (1,2%)
Hysterectomy	8 (3,4%)	2 (1,2%)
Total	60 (25,1%)	17 (9,3%)

Incidence of Septicaemic Shock

Septicaemic shock was about 8 times more common after the intraperitoneal than the extraperitoneal method (Table VIII).

TABLE VIII. INCIDENCE OF SEPTICAEMIC SHOCK

Caesarean section	No. of patients	%
Intraperitoneal	12	5,1
Extraperitoneal	1	0,6

Maternal Mortality Rate

Maternal deaths were almost 6 times more common after intraperitoneal section (Table IX).

TABLE IX. MATERNAL MORTALITY

Caesarean section	No. of patients	%
Intraperitoneal	8	3,4
Extraperitoneal	1	0,6

Comment Upon the Integrity of the Peritoneal Purse-String Suture

The results in this study indicate that the secondary closure of the peritoneal cavity in the modified extraperitoneal Caesarean section technique was effective in sealing off the peritoneal cavity, because the incidence of postoperative generalised peritonitis in this series was about 5 times less than it was with the intraperitoneal technique (3,5% versus 16,3%). In this regard, it is interesting that repair of damage to the peritoneum, which occurs quite commonly when other methods of extraperitoneal Caesarean section are employed, produces an efficient barrier to the peritoneal cavity according to Waters,^{2,3} Norton,⁴ and Ellis.⁵

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