

CAESAREAN SECTION

(A Statistical Study)

by

SAROSH MEHER THANEVALA*, M.R.C.O.G. (Lond.)

The first legendary caesarean section, according to Greek mythology, was the delivery of Asklepios, the physician, by his father Apollo from the womb of the dead Koronis. The earliest record of a woman surviving caesarean section was in 1500. Jacob Miter, a Swiss Sowgelder, sectioned his own wife and delivered a live baby — the wife lived to the age of 77, delivering four other children and a set of twins. Apart from a few such rare historic cases, even in the 18th century, the maternal mortality of caesarean section approached 100%. Great strides have been made since then and in 1939 Marshall published his monumental paper popularizing caesarean section, particularly the lower segment operation, and today the indications have expanded, as, with modern facilities of anaesthesia, blood transfusion and antibiotics, caesarean section has become comparatively a safer procedure than difficult vaginal manipulations. The art of surgery has not displaced the older art of obstetrics, it has only softened, it, for it is of a gentler kind.

The following is the analysis of caesarean sections performed at Irwin Hospital during a period of 4 years,

*Obstetrician/Gynaecologist, Irwin Hospital, New Delhi.

Paper read at the 12th All-India Obstetric and Gynaecological Congress at Ahmedabad in December 1963.

from 1st July 1959 to 30th June 1963. The Maternity Section of this old and central hospital of the city of Delhi was started only in 1959.

Incidence

The total number of sections performed, from 1-7-1959 to 30-6-63, was 288 from amongst 6,600 confinements during the same period, giving an incidence of 4.3%. The recorded incidence varies between 1.54% (Reva) to 7.5% (Barter) depending on the types of cases dealt by a particular institute and the attitude and the temperament of the obstetrician concerned.

The maximum incidence is in age group 26-30 years i.e. 39.5%. The incidence above that age group is less. This corresponds with the general age group of obstetric cases in India. Adamson records 46.2% in ages over 30 and considers age an important factor as an indication for caesarean section.

The highest incidence is in primigravidae and the incidence decreases with parity. The second labour is known to be easy but in our series its incidence is nearly the same as for the 3rd, 4th and 5th labours. The ratio of primiparae to multiparae is 1:4 which is the same as the ratio for all maternity cases, Mintz (60) records a ratio of primiparae to multiparae as 4:1 and in control as 1:10.

Primigravidae over 30 years were 27.3% and control 2.5%.

TABLE I
Racial Distribution

| Race | No. |
|--------------------|-----|
| Hindus | 265 |
| Muslims | 21 |
| Christians | 2 |
| Total | 288 |

Race

This again corresponds with the type of patients served by the hospital. More hindus attend the hospital than the muslims or other races.

Urban and Rural

The distribution according to urban and rural patients is shown in Table II.

TABLE II
Distribution according to urban and rural patients

| | |
|---------------|-----|
| Urban | 240 |
| Rural | 48 |
| Total | 288 |

For those coming from villages the indications were as under:

| | |
|--------------------------------|----|
| Placenta Praevia | 16 |
| Contracted Pelvis | 9 |
| Obstructed Labour | 7 |
| Ruptured Uterus | 5 |
| Accidental Haemorrhage | 4 |
| Faetal distress | 3 |
| Eclampsia | 1 |
| Old Scar | 1 |
| Cord Prolapse | 1 |
| Old V.V.F. repair | 1 |
| Total | 48 |

Ante-partum haemorrhage obstructed labour, contracted pelvis and ruptured uterus predominated as indications. There was no case of uterine inertia. This is as expected, as village women with a different attitude to life, as compared to women in cities, rarely suffer from uterine dysfunction.

Indications

The indications for caesarean sections are listed below:

| | | |
|--------------------------------|----|-------|
| Antepartum Haemorrhage: | 85 | 29.4% |
| Placenta Praevia | 67 | 23.2% |
| A.P.H. Unclassified | 15 | 5.2% |
| Accidental Haemorrhage | 3 | 1.07% |
| Contracted Pelvis: | 55 | 19.1% |
| Uterine Dysfunction: | 36 | 13.1% |
| Inertia | 23 | 7.9% |
| Cervical Dystocia | 13 | 4.5% |
| Obstructed Labour: | 29 | 10.1% |
| Threatened Rupture | 18 | 6.2% |
| Ruptured Uterus | 11 | 3.8% |
| Malpresentations: | 18 | 6.2% |
| Transverse | 10 | 3.4% |
| Breech | 4 | 1.3% |
| Compound | 2 | .7% |
| Face | 2 | .7% |

| | | | |
|----------------------------------|---------|-----|--------|
| Foetal Distress: | | 24 | 8.3% |
| Toxaemias: | | 7 | 2.4% |
| Pre-eclampsia | | 5 | 1.7% |
| Eclampsia | | 2 | .7% |
| Repeat Caesarean Section: | | 5 | 1.7% |
| Miscellaneous | | 29 | 10.09% |
| | | 288 | |

Ante-partum Haemorrhage

Ante-partum Haemorrhage: The highest incidence, as would be expected, is for the cases of ante-partum haemorrhage, 85 cases or 29.4%. Placenta praevia, grades 3 and 4, 67 cases, 11 cases not classified and only three cases of accidental haemorrhage. The type of section employed was lower segment for all cases. Out of these cases, 3 mothers died, giving a maternal mortality of 3.5%. These patients of central placenta praevia, grade 4, had come to the hospital in a poor state from nearby villages. The maternal mortality for cases of placenta praevia (by Cox, D'Esopo and Bryant) has been recorded as nil in the past 10 years. The perinatal mortality in our series was 34.8%, out of which half the cases were admitted with absent foetal heart sounds, giving a corrected mortality of 17.4%. Bryant records it as 15.4%, Cox as 11.9% and D'Esopo as 5.7%. It is the second largest cause of perinatal mortality according to Leon Tancer.

| | M.M. | P.M. |
|----------------|-------|-------|
| Cox | nil | 11.9% |
| D'Esopo | nil | 5.7% |
| Bryant | nil | 15.4% |
| Irwin Hospital | 2.08% | 17.4% |

Today there is no real place for discussion as to the correct lines of management for placenta praevia — these are, with an occasional exception, artificial rupture of membranes and caesarean section.

Opinion is divided on the wisdom of doing section for accidental haemorrhage. It is said that when section is contemplated patient is too ill to stand it. In our opinion it is the only life-saving measure in an otherwise hopeless case. Needless to say the fibrinogen content of the blood should be tested before undertaking the operation in these cases. Marshall and Cox advocate it even for foetal salvage in mild cases. The three cases mentioned above were of severe accidental haemorrhage who did not respond to conservative line of treatment, but did very well after the section. The decision under such a circumstance is not easy but with good anaesthesia and generous supply of blood for transfusion it is worth considering. Mulla did it in 4.8% and Levine in 2.2% with 8% stillbirths and 19% neonatal deaths. Bryant's maternal mortality was .9% and perinatal mortality 35%.

Dystocia

Contracted Pelvis

The next important group is that of

contracted pelvis in our series, which form 55 or 19.1% of the sections. Although the gross variety of contracted pelvis is fast disappearing with awareness of ante-natal care amongst the general public and improved obstetric services, the minor varieties giving dystocia are not uncommon. There was no maternal death in this group. Two babies died, giving an incidence of 3.6%, which is rather high for this group. The recorded incidence for this indication varies from 33.3% to 3.9% and perinatal mortality from 1 in 1,000 to 3%.

Uterine Inertia

Closely akin to the mild variety of cephalo-pelvic disproportion is dystocia due to dysfunctional uterine action. In our series it forms the next important group, uterine inertia — 23, cervical dystocia — 13, i.e. 36 cases or 13.1% of all sections. Levine records an incidence of only 2.7%, but Adamson records it as 25.8%. In our cases one child was lost giving a perinatal mortality of 2.8% which compares well with Marshall's figure of 4%, but in the recent series by Levine it has dropped to 1%. There was no maternal death in this group.

Foetal Distress

Twenty-four cases had caesarean section for foetal distress, giving an incidence of 8.3%, the recorded incidence varies between 9.2% to 12%. In our cases no mother or child was lost.

The previous three indications can be taken together for discussion. The decision to perform section for mild cases of cephalo-pelvic disproportion

or for uterine inertia or foetal distress depends on the past experience of the obstetrician along with his or her temperament. The majority of so-called "unnecessary caesarean sections" fall in this category. If the decision to do the operation is taken earlier, although a few more caesarean sections will be done, the ultimate result for the mother and child will be better. If, however, the operation is deferred until late in labour the overall risk to the mother and child will be greater, together with the higher incidence of scar rupture in subsequent pregnancy. To quote Marshall again, "the maternal mortality when the operation was done within six hours of labour was .13% and it rose to .6% when done after forty-eight hours." The morbidity also increases. According to Bryant it is 8.4% for elective sections and 14% for others. Levine emphasises infection as the major cause of maternal mortality in caesarean sections done late in labour.

Obstructed Labour

As we get cases from both urban and rural areas it is not surprising that cases of obstructed labour and even ruptured uterus were 29, or 10.1% of the total sections. Out of the 11 cases of ruptured uterus 10 were of spontaneous variety and one of the scar of an old classical operation. All uteri had ruptured before admission. Three cases who were admitted with threatened rupture died, giving a maternal mortality of 10.1% in this group. The foetal loss was 100% for ruptured uterus and 30% for obstructed labours, which is the highest in the series.

Malpresentations

Ten sections were performed for transverse presentation. This was out of a total of 24 transverse presentations, or 51.6%. Out of the 16 dealt with vaginally three had decapitation for impacted shoulders and the rest had internal podalic version. The overall foetal mortality for transverse lie in vaginal deliveries was 52% and in abdominal deliveries 30%. Caesarean section, therefore, can be justified in transverse presentation for foetal salvage when the foetus is alive. Bryant gives a perinatal mortality of 13% with transverse lie, maternal morbidity of 26% and one maternal death.

Breech presentation, contrary to expectation, forms only four cases or 1.3%. Perinatal mortality in these cases was nil. This indication can profitably be expanded. The reason for low incidence may be that in most of the booked cases breech is turned to vertex by external version in the ante-natal clinics and, therefore, majority of breech cases were emergency admissions. D'Esopo utilized caesarean section for breech in 12.3% cases with a foetal loss of 2%. In Levine's series the incidence was only 1.3%.

Toxaemias

Caesarean section for pre-eclampsia was done in five cases or 1.71%, with no perinatal loss. Eclampsia rarely forms an indication for caesarean section. The two cases we had did not respond to conservative line of treatment. Both the babies were still-born. Levine's incidence is 5.5%. Bryant gives a perinatal loss of 6%

and Adamson 8.5%, being the second highest cause of foetal loss, second only to placenta praevia.

Repeat Section

Fortunately repeat caesarean sections were only 5 or 1.7%. This is in conformity with now established fact 'once a caesarean not always a caesarean'. Greater emphasis is laid on vaginal delivery after caesarean section if the indication is not a recurrent one. Bryant's incidence of repeat caesarean section is as high as 43% with a perinatal loss of .6%, and 7 mothers died. Levine repeats the section in 32.6% with 1% perinatal mortality. In our series no child or mother was lost.

Cord Prolapse

Four caesarean sections were performed for cord prolapse with cent per cent foetal salvage. According to Bryant perinatal mortality is 21%. Incidence of section for cord prolapse is 1.4% (Mulla) and .23% (Levine). The early detection, before compression, is important for good results. Most of the cases are detected when it is too late. Our practice is to resort to section where cord pulsations are strong and foetal heart sounds good. Needless to say that quick theatre service is imperative with ready availability of an anaesthetist. Foetal heart sounds should be recorded in the operation theatre just before making the incision.

Diabetes

Two cases of diabetes were out of a total of three cases of diabetes seen in three years; two were delivered by caesarean section in the hospital in three years. Both the

mothers survived. One child was alive, the other had congenital atresia of the gut, was operated on but died on the third day. Peel employs caesarean section in 75% cases with 16% perinatal loss. Perinatal loss according to Bryant is 22% and his incidence is 1.2%. Levine's incidence is .6% and perinatal mortality is 3%.

Maternal Mortality

Six out of 288 cases died, giving a mortality of 2.08%. The total number of deaths during the same period was 43 out of 6,600 deliveries or .61% (6 in 1,000) and of the total deaths caesarean sections were responsible for 13.9%. The deaths were in 3 cases of threatened rupture and three cases of central placenta praevia, grade 4. The deaths were due to shock and haemorrhage occurring within twelve hours of operation. Marshall and Cox consider the mortality as ten times more than in normal delivery and lists the main causes as haemorrhage and shock 24%, pulmonary embolus 18%, anaesthesia 6.1%. Maternal mortality in Levine's cases is .19% and the causes in order of importance are peritonitis, embolus, cardiac failure, haemorrhage, renal failure and cerebral sinus thrombosis. The highest number of deaths in Bryant's series was due to embolus. Lucy mentions the mortality varying between .05% to .4%, about four times as that associated with vaginal delivery, but had no death in his series.

Maternal Morbidity

Is as listed below:

| | |
|--------------------------|-----|
| Mild sepsis | 25% |
| Local wound sepsis | 18% |

| | |
|--------------------------|--------|
| Respiratory infection .. | 16% |
| Thrombophlebitis .. | 3% |
| Shock | 9% |
| Paralytic Ileus | 3% |
| Burst abd. | 1 case |
| Pulm Emb. | 1 case |
| Urinary infection | 10% |
| Anaemia | 12% |

Two cases had rare complications and deserve separate mention. One case of ruptured uterus, who had hysterectomy, had paresis of left lower extremity and incontinence of urine, which responded well to physiotherapy and high doses of vitamin B₁. Another case, of a straight-forward caesarean section for foetal distress, developed mild form of cerebral thrombosis with hemiplegia. She was treated with antibiotics and physiotherapy with complete recovery in three months. There was no case of scar rupture in our series although some of our cases returned with another pregnancy within this short period of four years. Other rare varieties of complications mentioned in literature are abdominal fistula following the non-absorbable material and vesico-cervical fistula. According to Bryant morbidity is 8.4% in elective sections compared to 14% for all cases. In patients less than 17 years of age it is 44% and in those over 44 years it is 10%. Transverse lie has a morbidity of 23%, prolapsed cord 26%, failed attempted vaginal delivery 27%, placenta praevia 17% and abruptio placenta 18%.

Perinatal Mortality

Thirty-two babies were lost giving an overall perinatal mortality of 11.1%, out of which 15 had intra-

uterine death and one had gross congenital abnormality, giving a corrected mortality of 5.2%. Marshall and Cox had perinatal mortality of 3.8%. For all deliveries it is 22.7/1,000 and for caesarean sections 44.2/1,000. The cause of death in the majority of cases is respiratory failure leading to hyaline membrane and atelectasis as found at post-mortem. To avoid this complication incision should be big and the mouth should be cleared; 10% of babies were born asphyxiated at birth. Bryant gives the perinatal mortality as 5.6%, the highest incidence being 35% in cases of abruptio placentae and the lowest for repeat caesarean sections, i.e. 3.3%. Barter records it as 1%, Reva 2.9% and Levine 4.4%.

Technique

All except one case were performed with right paramedian and median subumbilical incisions. The only exception had Phalenstiel incision. All were lower segment incisions but no case was done by extra-peritoneal approach. Liquor amnii is considered as an irritant for peritoneum and hence extra-peritoneal operation is preferred by some. The technical difficulties preclude its use as a routine.

Both spinal and general anaesthetics were used, depending on the choice of the anaesthetist and surgeon. Since our anaesthetists come from a pool of general hospital there is no standardisation of anaesthesia for section. But the overall results have been the same. More depends on the anaesthetist than on the choice of anaesthetic agent.

Conclusion

To conclude then, caesarean section, the once dreaded obstetric operation, is more freely employed today, in turn giving better results for both mother and child. Considering the safety of the operation one, particularly of the younger generation, is apt to employ it more often than is necessary. Lest we err on the radical side let us remember that with all its advantages and relative safety it is a major surgical procedure and an intra-peritoneal operation with all the attached risks and not the least of all the risk of scar rupture and limitation of family. The art of surgery may be necessary to perform what may be a difficult caesarean section but to decide if this is necessary and to choose the ideal moment to deliver the child is surely the art of obstetrics.

Acknowledgements

I wish to express my gratitude to the Medical Superintendent, Irwin Hospital for giving me access to the hospital records. I shall be failing in my duty if I do not acknowledge with thanks the efforts of Drs. U. Gupta, G. Gupta, and S. Tandon for laboriously going through the hospital records to collect the necessary data.

References

1. Adamson: East African Med. J. 38: 322, 1961.
2. Barter, R. H.: Am. J. Obst. & Gynec. 81: 493, 1961.
3. Bryant, R. D.: Am. J. Obst. & Gynec. 81: 480, 1961.
4. Claye, A.: J. Obst. & Gynec. Brit. Com., 68: 577, 1961.

5. D'Ecopo, D.: *Am. J. Obst. & Gynec.* 58: 1120, 1949.
6. Durfee, R. B.: *Surg. Gynec. & Obst.* 110: 173, 1960.
7. Jackson, I.: *Practitioner*, 186: 369, 1961.
8. Kirkland, J. A.: *Am. J. Obst. & Gynec.* 78: 1292, 1959.
9. Leon Tancer, M.: *Obst. & Gynec.* 19: 92, 1962.
10. Levine, W.: *Obst. & Gynec.*, 19: 42, 1962.
11. Lucy, R.: *Lancet*, 80: 573, 1962.
12. MacLennan: *Am. J. Obst. & Gynec.* 82: 22, 1961.
13. Marshall, Mcl.: *Trans. XII Brit. Congr. Obst. & Gynec.* 1949.
14. Marshall, Mcl.: *Brit. Med. J.* 2: 72, 1949.
15. Marshall, Mcl.: *Proc. Roy. Soc. Med.* 44: 127, 1951.
16. Mulla, N. and Bates, J.: *Am. J. Obst. & Gynec.*, 82: 669, 1961.
17. Mintz: *Am. J. Obst. & Gynec.* 79: 224, 1960.
18. Poidevin, L. O.: *Brit. Med. J.* 2: 1058, 1959.
19. Ritter, P. M.: *Am. Med. Assoc.* 175: 715, 1961.
20. Riva, H. L.: *Am. J. Obst. & Gynec.* 81: 501, 1961.
21. Varga, A. and Fields, C.: *Am. J. Obst. & Gynec.*, 82: 687, 1961.
22. Williams, B.: *J. Obst. & Gynec. Brit. Emp.* 67: 853, 1960.
23. Williams, J. L.: *Brit. J. Urol.* 31: 325, 1959.