

ANTENATAL ADMISSIONS AND THEIR IMPACT ON PERINATAL OUTCOME*

by

ANIL H. AMBEKAR

and

AJIT C. MEHTA

SUMMARY

A pilot study of all antenatal admissions for one month was carried out The N. Wadia Hospital. In order to compare the differences in characteristics between public and private patients, almost equal number of private patients from a private hospital were studied. Scope of antenatal admissions in further improving perinatal results has been analysed.

Introduction

Since the dawn of this century, it has been an established fact that antenatal admissions are necessary in high-risk pregnancies to improve the short and long term results of such pregnancies. The history of antenatal admissions began in November 1901 when the first antenatal bed was provided at the Edinburgh Royal Maternity and Simpson Memorial Hospital by Ballantyne who stressed the importance of antenatal admissions in high-risk pregnancies to improve perinatal results. Initially the scope of antenatal admissions was mainly limited to maternal interest as the maternal mortality and morbidity was quite high in those days. But over the past two or three decades the

picture has changed and as the hazards to the mother are progressively receding, the hazards to the foetus are being increasingly recognised and the scope of antenatal admissions in foetal interest is progressively increasing. In Wadia hospital, the antenatal admissions 30 years ago were mainly for conditions like anaemia, pre-eclampsia, hypertensive disorders, heart disease, maternal infections including infectious diseases and pulmonary tuberculosis—conditions which needed antenatal admission mainly in the maternal interest.

The concept of antenatal admissions in foetal interest has mainly come over the past two decades and today more and more antenatal patients are admitted in our hospital for conditions like—intra-uterine growth retardation, postdatism, increased risk of prematurity, threatened premature labour, premature rupture of membranes, bad obstetric history and decreased foetal movements—conditions

*This paper was presented at the Perinatology Seminar, organised by the Perinatal Mortality Subcommittee of FOGSI on 10th June 1983 at N.W.M.H. seminar hall.

From: *Nowrosjee Wadia Maternity Hospital, Parel, Bombay-400 012.*

Accepted for publication on 11-8-1983.

which demand antenatal admission mainly for improving perinatal outcome.

The aims of this study were to evaluate:

- (1) The amount of antenatal admissions needed in the pregnant population.
- (2) To determine the ideal strength of antenatal beds needed.
- (3) To note the various reasons for which the antenatal admissions are made.
- (4) To relate some of the factors present in these admitted cases to perinatal results.
- (5) To note the differences in characteristics of antenatal admissions amongst public and private patients.
- (6) To assess the scope of antenatal admissions in further improving the perinatal results.

To achieve these aims a pilot prospective study of all the antenatal admissions at the Nowrosjee Wadia Maternity Hospital from 1st April to 30th April 1983, over a period of one month, was carried out. The criteria for admitting a case in the study were, that the uterus should be 5 cm or more above the symphysis pubis i.e. at least 14 weeks or more by gestation and the case should not deliver or abort in the first 24 hours of admission. In order to compare the differences in characteristics amongst public and private patients an almost equal number of private patients from the Hospital For Women Care—Bombay, were studied and the characteristics in the two groups were compared. The perinatal deaths in the month of April were analysed and the scope of antenatal admissions in further improving perinatal results was defined.

Results

In the month of April there were 984 antenatal registrations and 223 antenatal admissions, i.e. the ratio of antenatal admissions to registrations was 1:4.4. In the

same month there were 632 deliveries i.e. ratio of antenatal admissions to total deliveries was 1:2.8. This figure is nearly three times higher when compared to the private patients whose ratio was 1:7.5 of the total deliveries in private patients.

The ideal strength of antenatal beds needed was estimated from the fact that 223 antenatal patients were admitted in 30 days and the average stay of each patient was 7 days. Hence the ideal bed strength needed was 52 beds. Currently in our planning, out of 180 obstetric beds, 25 beds are reserved for antenatal admissions i.e. 14% beds are reserved for antenatal purposes. But looking at the load of antenatal admissions in our hospital this 14% reservation is quite inadequate and on an average there are atleast 60 antenatal patients in our hospital every day. Hence there is a strong need to raise funds for increasing the strength of antenatal bed from 14% to 29% which is our ideal requirement.

The study also revealed that at a public hospital 50% of the antenatal admissions were in maternal interest and 40% in foetal interest. This was in contrast to private patients where 62% of the antenatal admissions were in foetal interest and only 27% in maternal interest.

Table I shows the various reasons for antenatal admissions in maternal interest in public and private patients.

Table II shows the various reasons for antenatal admission in foetal interest amongst the public and private patients.

Table III shows the different reasons for antenatal admissions in miscellaneous conditions.

Anaemia accounted for 12% of antenatal admissions amongst the public patients, whereas there were no antenatal admissions for anaemia in private patients,

TABLE I
Antenatal Admissions in Maternal Interest

	Public Pt.	Private Pt.
(1) Anaemia	12.0%	—
(2) Pre-eclampsia and Hypertensive disorders	7.0%	11.0%
(3) Bleeding in 2nd trimester	8.0%	1.3%
(4) Infections	4.4%	3.0%
(5) Oedema	4.4%	3.0%
(6) A.P.H.	4.0%	9.0%
(7) Previous caesarean section	4.0%	—
(8) G.I. disturbances	4.0%	—
(9) Heart disease	0.4%	—
(10) Convulsions	0.4%	—
(11) Contracted pelvis	1.0%	—

TABLE II
Antenatal Admissions in Foetal Interest

	Public Pt.	Private Pt.
(1) I.U.G.R.	9.4%	—
(2) Increased risk of prematurity	7.6%	1.3%
(3) Postdatism	5.4%	10.0%
(4) BOH	5.0%	—
(5) Threatened premature labour	4.0%	14.6%
(6) Premature rupture of membrane	2.7%	20.0%
(7) Incompetent cervix	1.3%	2.6%
(8) Twins	1.3%	1.3%
(9) Decreased foetal movements	0.8%	4.0%
(10) Diabetes	—	8.0%
(11) Hydramnios	0.4%	—
(12) RH Isoimmunisation	0.4%	—
(13) Abnormal presentation	0.8%	—

TABLE III
Antenatal Admissions Miscellaneous Conditions

	Public Pt.	Private Pt.
(1) TDI therapy	8.0%	1.3%
(2) For research	0.8%	—
(3) Investigations	0.8%	—
(4) Unmarried girls	0.5%	—
(5) Acute pain in abdomen	—	5.3%
(6) Other non-obstetric reasons	—	4.0%

although the incidence of anaemia in private patients was around 30%. 85% of the anaemia patients were with moderate anaemia and 78% of them were 30 weeks or less by gestation, giving enough time

for correction of anaemia with suitable haematinics before labour. Looking at the perinatal results in anaemia it is clear that results are favourable in almost all admitted cases. None of the cases had pre-

term labour. The incidence of suspected intrauterine growth retardation was 7% and results were favourable in all the delivered cases. The major bulk of anaemia admissions was with moderate anaemia before 30 weeks of gestation and none of them showed unfavourable perinatal results implying that anaemia is one condition which could be managed on OPD basis in majority of cases thus giving a chance to admit patients for other important reasons.

Pre-eclampsia and hypertensive dis-

orders accounted for 7% of antenatal admissions and 67% of the pre-eclampsia cases were of the mild variety, 27% moderate and the remaining 6% were severe cases. The perinatal results in pre-eclampsia were not quite favourable and there is a lot of scope for improvement by timely antenatal admission. Incidence of suspected IUGR was as high as 40% and perinatal mortality was 7%. 50% of the babies were low birth weight. All this suggests that there is still much to be done in the field of pre-eclampsia and hypertension to improve perinatal results.

TABLE IV
Anaemia

Accounts for 12% of AN Admissions (27 cases)

— Average antenatal stay—3 days

— Grades

Mild (Hb > 10 gms. but <12 gm.)—Nil

Moderate (Hb 7.5—10 gms.)—85%

Severe (Hb < 7.5 gms.)—15%

— Gestational Age

≤ 30 weeks — 78%

31-36 weeks — 15%

> 36 weeks — 7%

Incidence of preterm labour—Nil

Incidence of suspected IUGR— 7%

20% delivered—All outcomes favourable

TALBLE V

Pre-eclampsia & Hypertensive Disorders

— Account for 7% of Antenatal Admissions (15 cases)

— Average AN stay—8 days

Mild (BP <160/100) — 67%

— Grades Moderate (BP 160/100—180/120)— 27%

+ proteinurea +

Severe (BP > 180/120)— 6%

— Gestation

≤ 30 weeks — 27%

31-36 weeks — 27%

> 36 weeks — 46%

— Incidence of suspected IUGR — 40%

— Incidence of preterm labour — 7%

— Perinatal mortality—1 in 15 cases— 7%

— Birthweight of delivered cases

≤ 1500 gms.—8%

1501-2500 gms.—42%

> 2500 gms.—50%

Antepartum haemorrhage (APH) accounted for 4% of antenatal admissions with an average hospital stay of 7 days. Placenta praevia accounted for 75% of the APH cases. Accidental haemorrhage and unclassified APH accounted for 12.5% each of the APH cases. In placenta praevia 40% of the deliveries were by caesarean section and the perinatal results were favourable. The single perinatal mortality out of the 8 APH cases was in a case of accidental haemorrhage which had severe pre-eclampsia. Since pre-eclampsia is an important causative factor in accidental haemorrhage, timely antenatal admission in pre-eclampsia cases could prevent accidental haemorrhage and thus help in improving perinatal results in APH.

Primary intrauterine growth retardation (IUGR) accounted for 9.4% of antenatal admissions with an average antenatal stay of 13 days. In order to monitor foetal growth and well-being, serial ultrasonography was used in 24% of these cases and non-stress test was used in 52% of these cases. Amongst the deliveries cases none of them required elective caesarean section and 8.3% required induction of labour. Looking at the perinatal results it can be seen that 92% of the delivered babies were low birth weight and the perinatal mortality was as high as 8%. Hence there is a lot of scope for improvement in the field of IUGR.

Postdatism accounted for 5.4% of antenatal admissions with an average antenatal stay of 6 days. Twice a week non-stress test was done in 90% of the cases for monitoring foetal well-being. The NST was reactive in 9 out of 11 cases, borderline reactive in 1 out of 11 cases and non-reactive in 1 case. The borderline reactive and non-reactive cases required caesarean section for foetal distress in

labour. 50% of the postdated cases went in spontaneous labour and delivered vaginally normally. In 25% of cases the induction was successful in achieving a vaginal delivery. In 25% of cases caesarean section was done for foetal distress in labour. 84% of the babies were above 2500 gms. by weight and there was no perinatal mortality. Hence antenatal admissions has definitely helped in improving perinatal results in postdatism.

Increased risk of prematurity as judged by cervical effacement and dilatation was another important reason for antenatal admission with an average antenatal stay of as long as 18 days. The incidence of pre-term labour in this high-risk group was 18% which is higher than in the general population. Tightening of cervix was done in 9 out of 17 cases and was successful in preventing pre-term labour in all of them. Amongst the delivered cases, 44% of the babies were low birthweight and perinatal mortality was 12% which is still a considerable figure. These 2 cases which had pre-term labour and perinatal mortality had late antenatal admission and hence timely detection and antenatal admission can still improve the perinatal results in this condition.

Table VI shows that in public patients with 35.3% antenatal admissions the gross perinatal mortality was 37.9/1000 births and the corrected perinatal mortality for congenital malformations was 34.8/1000 births which is approximately 3 times the corrected perinatal mortality in private patients who have only 13.2% antenatal admissions.

Table VIII shows that the major toll is taken by prematurity which accounts for 42% of the perinatal deaths. Next in importance is IUGR accounting for 17% of perinatal deaths and postdatism accounting for 4% of perinatal deaths. Uterio-

TABLE VI
Perinatal Mortality in the Month of April

	Public Pt.	Private Pt.
% AN Admissions	35.3%	13.2%
Gross perinatal mortality rate	37.9/1000	19.4/1000
Corrected perinatal mortality rate	34.8/1000	12.3/1000

TABLE VII
Causes of Perinatal Mortality

	No. of cases	%
(1) Prematurity	10	42
(2) IUGR	4	17
(3) Postdatism	1	4
(4) Uteroplacental insufficiency	3	12
(5) APH	2	8
(6) Congenital malformations	2	8
(7) Intrapartum asphyxia	2	8

placental insufficiency accounted for 12%, APH for 8%, congenital malformations for 8% and intrapartum asphyxia for 8% of the perinatal deaths. Hence from this Table it is clear that there is still a tremendous scope for improvement in perinatal results in conditions like pre-term labour. IUGR, postdatism, uteroplacental insufficiency and antepartum haemorrhage and timely antenatal admission can help to achieve this goal. The incidence of pre-term labour can be reduced by routine cervical typing and prematurity risk scoring on all the antenatal patients and timely antenatal admission of patients at higher-risk of prematurity.

The use of sophisticated investigations for monitoring foetal well-being and growth in conditions like IUGR, postdatism and chronic uteroplacental insufficiency may help in improving perinatal results in these conditions and for achieving this close surveillance antenatal admissions are necessary in these conditions.

Conclusions

1. The scope of antenatal admissions is expanding as more and more high risk

factors are being recognised.

2. There is a strong need for providing sufficient antenatal beds to meet these expanding needs.

3. If the antenatal bed strength is limited, there is a need for scrutinising the indications for antenatal admissions and priorities should be set up depending upon the grade of risk involved.

4. There is good scope for improving perinatal results by antenatal admissions in conditions like increased risk of prematurity, IUGR and postdatism.

5. Making the sophisticated investigations for monitoring foetal growth and well-being available may help to improve perinatal results in these high risk pregnancies.

Acknowledgement

We are extremely grateful to Dr. Dina Patel, our Dean for granting us permission to carryout this study at the Nowrosjee Wadia Maternity Hospital and for allowing us to publish this data.

Reference

1. Ballantyne, J. W.: Brit. Med. Jour. I, 813, 1901.