

Research Article

## Cord Prolapse, Associated Factors and Fetal Outcome: A Report of 47 Cases from the Yaounde Central Hospital, Cameroon

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**Abstract** Cord prolapse is a condition in which the umbilical cord comes ahead of the presenting part. Fetal demise occurs as a consequence of the compression of the cord by the presenting part. We conducted this study to determine profile of pregnancy and its outcome at the Central Hospital Yaounde, Cameroon. This was an observational, descriptive and retrospective study of deliveries complicated by cord prolapse between January 2003 and December 2006 at the Central Maternity of the Central Hospital Yaounde. Data was retrieved from patient's files, operation room registers and admission registers. During this period, there were a total of 6924 deliveries amongst which 47 were complicated by umbilical cord prolapse (2.8 per 1000 deliveries). Among the women with cord prolapse, 62.2% were delivered by emergency caesarean section. Fetal demise was reported in 32% of the women upon admission. An abnormal pelvis was seen in 25.5% of the women. Artificial rupture of membranes was carried out in 40.4%. This study shows that cord prolapse is associated with severe fetal consequences in our unit. A good knowledge of the risk factors, prompt diagnosis and rapid intervention by medical staff are required.

**Keywords** cord prolapsed; perinatal morbidity and mortality; caesarean section; vaginal delivery

### 1 Introduction

Umbilical cord prolapse is a rare obstetric complication occurring in about 1 to 3 per 1000 deliveries [3, 11, 14]. Cord prolapse is usually the result of a sudden decompression of the uterus due to spontaneous or artificial rupture of membranes, with the cord observed in front of the presenting part [3,7]. Several factors predispose to cord prolapse, amongst which are breech presentation, abnormal lie and presentation, hydramnios and long cord [2,5,9,11, 14]. Perinatal mortality is the most feared complication and often seen in up to 91% of cases [6, 10].

Little is known about the pattern of umbilical cord prolapse in Cameroon as no previous study has been published on this subject [9].

We decided to review all cases of cord prolapse managed in the service over a period of four years period in order to:

- Determine the socio-demographic profile of the women presenting with cord prolapse.
- Determine materno-fetal factors that may have precipitated the prolapse.
- Determine the fetal outcome of the babies.

### 2 Patients and methods

This was an observational descriptive and retrospective study of deliveries complicated by cord prolapse between January 2003 and December 2006 at the Maternity of the Central Hospital Yaounde. All women with gestation ages equal or greater than 28 weeks were included.

Data was retrieved from patient's files, operating room registers and admission registers. The variables of interest were: age of the mother at delivery, the parity, the marital status, the number of fetuses, the mode of delivery (caesarean delivery or vaginal delivery), fetal weight, and Apgar score. Data analysis was done using Epi-info 2000 and expressed using tables and percentages.

### 3 Results

During this period, the overall 6924 deliveries occurred among which 47 umbilical cord prolapses were identified (2.8 per 1000 deliveries). The mean age was  $25.6 \pm 6$  years. Primiparity, multiparity and grand-multiparity was seen in 22 women (46%), 13 women (27.7%) and 12 women (25.5%) respectively.

Mal-presentation (68.1%) was predominant with breech occurring in 42.5% of cases. However, complete breech was most frequent (16 of 20 cases), frank or footling breech in 4 of 20 cases (Table 1).

In 11 of the 47 cases, cord prolapse occurred in a twin pregnancy and in 10 of 11 cases (91%), it concerned the second twin. In 59.6% (25) of the cases membranes ruptured spontaneously, artificial rupture was conducted in 40.4% (19), while 6.4% had premature rupture of membranes. The

Type of presentation	Type of presentation	
	N = 47	
	N	%
Breech	20	42.6
Cephalic	21	44.7
Shoulder	6	12.8

**Table 1:** Distribution of the patients according to the fetal presentation at admission.

Characteristics	Fetal outcome	
	Alive	Death
	N = 30 (63.8%)	N = 17 (36.2)
	N(%)	N(%)
<b>Apgar score at 5 minute</b>		
0	0 (0.0)	15 (31.9)
1–3	28 (59.5)	2 (4.3)
4–7	2 (4.3)	0 (0.0)
<b>Fetal weight at delivery (grams)</b>		
< 2000	0 (0.0)	4 (8.5)
2000–2499	3 (6.4)	7 (14.9)
2500–3499	19 (40.4)	2 (4.3)
3500–3999	6 (12.0)	2 (4.3)
≥ 4000	2 (4.3)	2 (4.3)

**Table 2:** Outcome characteristics of the fetus at birth and after two days.

bony pelvis was clinically evaluated as abnormal (borderline or absolutely contracted) in 25.5% of the cases. Delivery occurred vaginally in 38.3% and caesarean delivery in 61.7%.

Neonatal asphyxia was frequent (i.e. Apgar score < 7 at the 5th minute) among the babies alive and symptoms persisted two days after delivery (59.5%). Among the babies born alive premature delivery was found in 6.4%. The incidence of fetal macrosomia was similar in the two groups. However, 28% of the study population was preterm pregnancies, which is similar to the 29.8% of babies born with weights less than 2500 gms (Table 2).

#### 4 Discussion

We conducted a study intended to bring about our contribution for providing knowledge on the pattern of cord prolapse in Cameroon. The mean age of patients was  $25.6 \pm 6$  years, with a slight multiparous and grand multiparous predominance (54%).

We found a prevalence rate of cord prolapse at 2.8 per 1000 deliveries; though this, value might be slightly lower than the real estimates, due to inadequate documentation and the exclusion of missing files. The prevalence of cord prolapsed in our report, is similar to that reported by other authors [3, 11, 14]. Kouam et al., also published similar rates

for the University teaching hospital Yaounde [9]. We found the fetal death of 68.2% among the pregnancies complicated by cord prolapse. Cord prolapse is associated with a high risk of fetal jeopardy and the general reported prevalence of fetal death varies between 36% and 91% [10, 11, 14]. Some studies reported that multiparity was a risk factor for cord prolapse [2, 3]. In their series they reported 76% and 64% rates of multiparity in women presenting with cord prolapse. In the present study, multiparous women represent 54% of all patients, and this was slightly lower than theirs but confirms the multiparity predominance as a risk for cord prolapse. Relaxation of the uterine myometrium as a consequence of successive deliveries and the increasing amount of fibrosis within the myometrium may play a contributory role.

A preterm delivery rate of 28% was reported in our series. Dufour et al., reported a similar rate (26%) of preterm delivery [3]. The major complication of cord prolapse is an increased perinatal mortality [10, 11, 14]. This was evident, as 32% of the fetuses on admission had no fetal heart tones and only 31.8% of the babies were alive after five minutes. Several authors have reported on the poor fetal outcome associated with cord prolepses [10, 11, 14]. Multiple pregnancies were reported in 23.4% of our patients. This is higher than the 1.8% incidence of twinning in our environment [8]. Other authors have also reported the risk of cord prolapse in twin pregnancies [3, 14]. When this does occur the second twin is most concerned as was seen in our study with 91% of second twin involvement. The delivery of the first twin is usually followed by a refractory phase characterized by absent uterine contractions. The uterus is thus soft, with increased risk of malpresentation and malposition because of excess space within the uterus. The probability of cord prolapse is multiplied 9-folds in breech presentation, 4-folds in shoulder presentation and much lower with cephalic presentation. The breech presented in 42.5% of the women in our study, closely followed by the cephalic 31.9% and shoulder 12.8%. Malpresentation was therefore seen in 68.1% of the women. The membranes ruptured spontaneously in 59.6% of the cases. Artificial rupture was reported 40.4% and is lower than the 51% to 74% reported by others respectively for pre-term and term pregnancies [12] and 32.4%. Artificial rupture of membranes especially when conducted before engagement of the presenting part favors cord prolapse [12].

Pathological pelvises have also been associated with cord prolapse. Cord prolapse is an obstetric emergency and an indication for emergency caesarean section if the fetus is alive. We reported a 61.7% rate of caesarean section which is similar to a report from Mali in West Africa [14]. This high rate of caesarean section is probably due to the fact that information on most if not all women delivered by caesarean section was readily retrieved from the theatre

registers, while the files of most women delivered vaginally were difficult to find or were incomplete. A 36.2% perinatal mortality after two days was reported in our series. Most authors do recognize the fact that fetal outcome is intimately related to the time lapse between diagnosis and effective management [4,12]. The diagnosis to delivery interval 10 to 20 minutes for 50% of patients in Saudi Arabia and no fetal death was observed [4]. Similar mean time from diagnosis to treatment at 20 minutes was reported in USA [12] and only 5 severe asphyxias were observed among the 48 cases. But time lapsed in our series was very long (180 minutes) and can explain the poor fetal outcome observed. A positive fetal heart tone of 61.8% seen in our series is certainly higher than real, because fetal demise at birth and at five minutes was 68.2%. Supportive treatment measures such as maintaining the examining hand on the presenting part or filling the bladder with 500 mL of normal saline practiced in the service might have contributed in improving fetal outcome [1,13]. Fetal death was, more common with preterm babies or babies with fetal weight less than 2500 gms. This increased fetal loss rate was certainly not a consequence of cord prolapse alone, prematurity in itself is associated with an increased perinatal morbidity and mortality. Live births may occur following cord prolapse, but this will be influenced by the level of obstetric care, the experience of the team and the availability of basic material and infrastructure.

We acknowledge that there are some limitations related to retrospective studies such as the incomplete nature of files and poor documentation in our services, which certainly have influenced the results of this study.

## 5 Conclusion

Cord prolapse are associated with severe fetal consequences at the Central Hospital Maternity in Yaounde, Cameroon. A good knowledge of the risk factors, quick diagnosis and prompt management of cord prolapse is needed for preventing its complications in our setting.

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