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Study of risk factors and fetal outcome in cord prolapse: An observational study at tertiary hospital

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Abstract
Cord prolapse is defined as the presence of cord below the presenting part with ruptured membranes. It is a clinical diagnosis, the main aim is immediate delivery to improve perinatal outcome.

Aims and objectives
1. Study of prevalence of cord prolapse
2. Study of predisposing factors of cord prolapse.
3. Study perinatal outcome in patients with cord prolapse.

It was a retrospective study carried over a period of one year in department of gynae and obstetrics skims soura. Prevalence of cord prolapse was 0.6% in our study. It was more in multi paras, in age group of 30-40 year, and in those with Mal presentations. Mode of delivery was more by lscs. Fetal outcome was 63.33%live births and 36.67% fetal deaths. Neonatal asphyxia was 56.6% among those born alive.

Conclusion: Cord prolapse is associated with severe fetal consequences that can be reduced by quick diagnosis and prompt management.

Keywords: Proximal tibia fracture, MIPPO, knee stiffness, wound dehiscence

Introduction
Cord prolapse is defined as the presence of cord Below the presenting part of foetus with ruptured membranes. Cord presentation is defined as presence of cord below the presenting part but with Intact membranes.

Cord prolapse is a clinical diagnosis and is made by Palpation of cord below presenting part with absent membranes and is regarded as acute obstetric emergency. The main aim in cord prolapse is immediate delivery to improve perinatal outcome.

Cord prolapse occurs in about 1-3 per 1000 deliveries [1, 2, 3]. The main reason for occurrence of cord prolapse is sudden uterine decompression that can occur as a result of spontaneous or artificial rupture of membranes with prolapse of umbilical cord [1, 4]. umbilical cord prolapse is associated with following factors; breech presentation, multiple pregnancies, prematurity, malpresentations, polhydraminos and long cord [2, 3, 5, 6, 7]. It is known that perinatal mortality is seen in 91% of cases [8, 9].

The main aim in cord prolapse is early diagnosis and Quick decisive intervention to improve feotal survival.

Whenever a patient presents with cord prolapse our main aim is immediate delivery. The option of vaginal delivery depends on status of foetus and cervical dilatation. In case foetus is dead vaginal delivery is preferred. However if cord prolapse is diagnosed in 2nd stage of labour with advanced cervical dilatation instrumental delivery is preferred but if diagnosis is made in first stage of labour with early cervical dilatation emergency cesarean section is preferred [10, 11].

Aims and Objectives
1. To find prevalence of cord prolapse
2. Risk factors predisposing to cord prolapse
3. To study perinatal outcome in patients with cord prolapse.

Methodology
This was retrospective Study that was carried in our hospital of Skims soura from period of September 2018-August 2017.

Inclusion criteria

1. All patients with umbilical cord prolapse with gestational >28 weeks with or without onset of labour irrespective of fetal viability.

Exclusion criteria

1. Patients with umbilical cord prolapse <28 weeks.

Umbilical cord prolapse was a clinical diagnosis.

It was diagnosed by vaginal examination after rupture of membranes. option of vaginal delivery was In those patients who had cord prolapse with fetal demise. In those patients were cord prolapse was diagnosed in first stage of labour emergency Lacs was done while in those were Diagnosis was made late in 2nd stage with advanced cervical dilatation instrumental vaginal delivery was done. But in all patients with umbilical cord prolapse with a live foetus the first immediate step after diagnosis was pressure on cord was relieved by placing cord inside the vagina in those with protrusion and lifting the presenting part by two figures or filling the maternal urinary bladder with about 500ml of normal saline.

Data obtained was analysed using Microsoft office Excel 2007 worksheet.

Results

A total of 5000 cases were studied out of which 30 cases were of cord prolapse Thus prevalence of cord prolapse in our study was=0.6% Other results were tabulated as below:

Distribution of Patients According to Age

Age of patients	Frequency of cord prolapse
10-19 years	0 (0%)
20-30 years	10 (33.33%)
30-40 years	20 (66.67%)

Thus mean age group was 30-40 years.

Distribution of Patients According to Parity

Parity	No. of patients
Primigravida	10 (33.34%)
Multigravida	8 (26.66%)
Grandmulti	12 (40%)

Thus cord prolapse was more in multigravida. (66.66%)

Distribution of Patients According to Foetal Presentation at Time of Admission

Foetal Presentation	No. of patients
Breech	12 (40%)
Vertex	13 (43.34%)
Shoulder	5 (16.66%)

Malpresentation was predominant with breech occuring in 40%.

Distribution of Patients According to No. of Foetuses

7 out of 30 cases (23.3%) cord prolapse occur in twins and in 6 patients out of 7 occurred in 2nd twin.

Distribution of Patients According to Rupture of Membranes

Membrane status	No. of patients
Spontaneous rupture	18 (60%)
Artificial rupture	11 (36.67%)
Premature rupture	1 (3.34%)

Thus cord prolapse was more in spontaneous rupture of membranes.

Distribution of Patients According to Mode of Delivery:

Mode of delivery	No. of patients
Normal delivery	38.3%
Lscs	61.7%

Feotal Outcome in Cord Prolapse

Apgar score	Live births N=19 (63.33%)	Fetal deaths N=11 (36.67%)
0	0	9 (30%)
1-3	17 (56.6%)	2 (6.6%)
4-7	2 (6.6%)	0

Feotal weight		
< 2kg	0.	1 (3.3%)
2- 2.5kg	3 (10%)	4 (13.3%)
2.5 -3.5 kg	12 (40%)	2 (6.6%)
3.5 - 4 kg	3 (10%)	2 (6.6%)
>4 kg	1 (3.3%)	2 (6.6%)

Neonatal asphyxia was frequent (apgar score <7 at 5 minutes) among babies born alive (56.6%). Preterm delivery was seen in 10% cases (EFW <2.5kg) in those born alive and 13.3% in fetal deaths. Macrosomia was seen in 3.3% in those born alive and 6.6% in fetal death's.

Discussion

In our study prevalence of umbilical cord prolapse is 0.6%. This is similar to studies done by other authors [1, 2, 3]. Kouam *et al*. also found similar such prevalence [7]. prevalence of umbilical cord prolapse in studies conducted in united kingdom was only 0.2% [9]. This is because of better facilities for perinatal care and neonatal support in countries like U.K

In our study cord prolapse occurred in age group of 30-40 years (66.67%).This is similar to studies [10, 12]. It was more in multiparous patients, some studies reported that multiparity was a risk factor for cord prolapse [1, 5]. In their studies they reported 76% and 64% rates of multiparity in women presenting with cord prolapse. In our study multiparous women represent 66.6% of all patients. Actually what happens in multiparous women there is relaxation of uterine myometrium and excessive fibrosis that contributes to cord prolapse. Also in multiparas there is late engagement of presentation part that contributes to cord prolapse [13, 14]. Now if we have a look over association of cord prolapse with no. of feotuses, we can see (23.3%) of patients with cord prolapse had twin pregnancies that too with 2nd twin (85.7%). similar such studies showed increased risk of cord prolapse in twin pregnancies [1, 3].

If we go for association of cord prolapse with fetal presentation in our study we can see that cord prolapse is increased in malpresentation and that too in breech presentation (40%) and in shoulder presentation it was (16.67%).

Membrane status in our study as below

Spontaneous rupture was seen in 60% of patients,artificial rupture in 36.67% and premature rupture in 3.34%.

Artificial rupture of membranes in our study was 36.67% while as in studies it is 51% to 74% for preterm pregnancy and 32.4% for term pregnancy [15] If artificial rupture of membranes is done before the engagement of presenting part chances of cord prolapse are increased [15].

Now let's have a look over the mode of delivery in patients with cord prolapse we can see that vaginal delivery was mode of delivery in 28.3% and lscs was done in 71.7% of patients. lscs rate of 71.7% matches with a report from Mali in West Africa [16]. Most of the patients in my study were unbooked and were

referred to our tertiary hospital for cord prolapse. It has been found in other studies that unbooked status is a risk factor for cord prolapse and perinatal mortality [10].

Thus the risk factors for cord prolapse in our study were multiparity, malpresentation, multifetal gestation, artificial rupture of membranes before engagement of presenting part and most important unbooked status of patients.

It has been found that cord prolapse is an obstetric emergency. In addition to this it has been found that cord that is protruding outside vagina is associated with increased perinatal mortality [14]. ACOG recommends that in cord prolapse time interval between diagnosis to emergency Lscs should be utmost 30 minutes in order to improve fetal survival. In Saudi Arabia a study was done were no fetal death was observed when diagnosis to delivery interval was 10-20 minutes for 50% of patients [17].

Similarly in USA a study was done in which mean interval between diagnosis to intervention was 20 minutes and only 5 cases of severe asphyxia were noted out of 48 [15]. In our study perinatal mortality is 36.67%. This high figure is because;

1. Unbooked status of patients presented with us as cord prolapse.
2. Time interval between diagnosis and intervention was >30 minutes.

Perinatal mortality rate of our study (36.67%) is similar to 40.3% from Ibadan, Nigeria [18].

In our study perinatal mortality was more in foetuses <2.5kg of weight. The association between umbilical cord prolapse and Low birth weight babies has been reported by studies [6, 11]. That show there is five times increased risk of cord prolapse in foetuses weighing <2.5kg [11].

Thus increased feotal loss is not only related to low birth weight but also to prematurity. Thus we conclude by narrating that live birth rate in cord prolapse is influenced by level of obstetric care, the experience of team and availability of basic material and infrastructure.

Conclusion

From our study we thus conclude that cord prolapse is associated with severe fetal consequences that can be reduced by better knowledge of risk factors of cord prolapse by which prevalence of cord prolapse can be reduced. But once cord prolapse has occurred quick diagnosis and prompt management is needed to prevent fetal complications.

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