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ORIGINAL ARTICLE

Frequency of True and False Umbilical Cord Knots and their Relation Maternal Age and Parity

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ABSTRACT

Background: Umbilical Cord Knots both true and false are common abnormalities whichobstruct the blood flow and oxygen supply to the fetus and are frequently associated with advanced age and high parity of the mother.
Aim: To find the frequency of true and falseumbilical cord knots in 100 samples of placentae (with attached umbilical cords) and their relation to maternal age and parity.
Study design: Descriptive cross sectional study.
Place of study: Anatomy Department of (BMSI) Basic Medical Science Institute, JPMC Karachi.
Methodology: 100 normal vaginally delivered full term placentae with attached umbilical cords were studied with direct Visual examination of the cords. The study included frequency, type and location of the knots and their relation with maternal age and parity. Data collected was analyzed by SPSS version 23 and presented in the form of tables and figures, cross tabulations of umbilical cord knots with age of mother and parity was done. Chi square test was used as test of significance asvariablesunder study are qualitative in nature.
Results: This study showed that frequency of umbilical cord knots in 100 samples of placentae was 14% out of which 10(72%) were false knot and 4(28%) were true knot. Bothtrue and false knots were more frequent in male babies. There was statistically significant relation of knots with advanced maternal age (>30) and high parity (>5).
Conclusion: Frequency of true umbilical cord knots is 4%. Most of knots are found in male babies and there is statistically significant relation of umbilical cord knots with advanced maternal age and high parity.
Keywords: Umbilical cord, true knots, false knots, fetus.

INTRODUCTION

Umbilical cord is the linkage between fetus and mother placenta and umbilical cord form a transport system for substances passing between the mother & fetus[1]. By direct visual umbilical cord examination, umbilical cord abnormalities can be studied[2].Umbilical cord abnormalities can endanger fetal life as umbilical cord knots can impair oxygen and blood flow to fetus.About 1% of babies are born with one or more knots in the umbilical cord[3]. In first trimester because of more amniotic fluid and frequent movements likelihood of true knots is common. Loose true knots are of no harm until pulled tight and then and if so, hinders fetal oxygenation resulting in birth asphyxia[1].

It has also been seen in various studies that knots have gender prevalence and more common in male babies. Location of knots is mostly near fetal end as fetus remains motile in early pregnancy. There is strong association of umbilical cord knots with grand multipara and advanced maternal age, false umbilical cord knots are usually accumulated matter of Wharton's Jelly and could be arterial kinks as well. So, this study was designed to see that is there any relationship of true and false umbilical cord knots with maternal age, parity & gender[2].

MATERIALS & METHODS

The study was conducted in Department of Anatomy BMSI, JPMC Karachi after approval from Ethical Committee. One hundred samples of placentae were collected from second stage labour room and preserved in 10% formalin. All the samples were carefully observed for true and false knots of umbilical cord. C-section and other abnormal vaginal deliveries were excluded from the study. In our study we looked for numbers, type, location and gender prevalence of knots in the cord length. Data collected was analyzed by using SPSS version 23. Simple frequencies and percentages were calculated and presented in the form of tables and figures. Cross tabulation of knots with maternal age and parity was done.Chi square test was used as test of significance as variables under study are qualitative in nature.

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RESULTS

This cross sectional study was conducted on 100 samples of placentae with attached umbilical cords.It was found that out of 100 , frequency of knots was 14 (4%),10% were false knots and 4% were true knots (Fig. 1). Out of 10 false knots, 7(70%) were found in male babies and 3(30%) in female babies (Fig. 2). Out of 4 truek nots, 3(75%) were found in male babies and 1(25%) were in female babies (Fig. 3). Regarding the location of knots on the umbilical cord, out of 14 knots, 10(72%) were near the fetal and 3(21%) near to the middle and 1(7%) near the placental end. It was proved in this study that frequency of knots was higher in female of age group >30 and this relationship was statistically highly significant (Table 1). This study concluded that frequency of knots (true and false) was higher in females with high parity i.e., having >5 children and this relationship was statistically significant (Table 2).

RESULTS

Table 1: Umbilical cord knots

	+ve	-ve	
<30	03	69	72
>30	11	17	28
Total	14	86	100

Chi square value = 20.55 P value<0.05 (significant)

Table 2: Umbilical cord knots

	+ve	-ve	
<5	04	70	74
>5	10	16	26
Total	14	86	100

Chi square value = 17.4 P value <0.05 (significant)

Figure 1: Frequency of umbilical cord knots is 100 placentae (n=100)

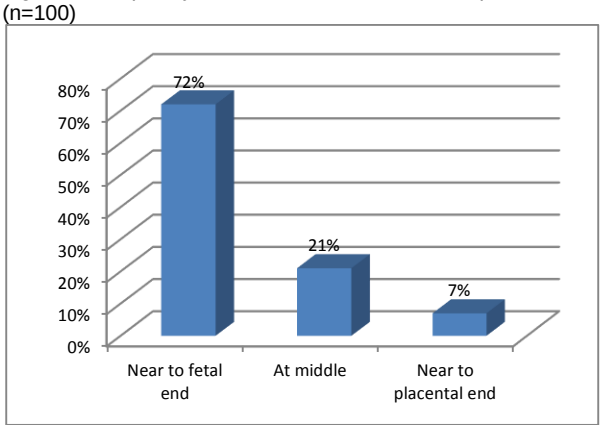


Figure 2: Gender based distribution of false knots

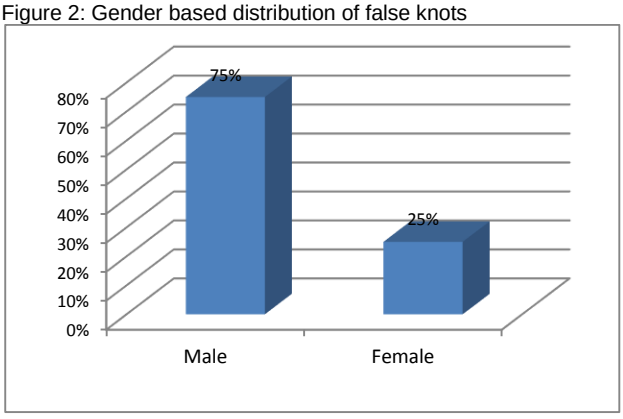


Figure 3: Gender Based Distribution of True Knots

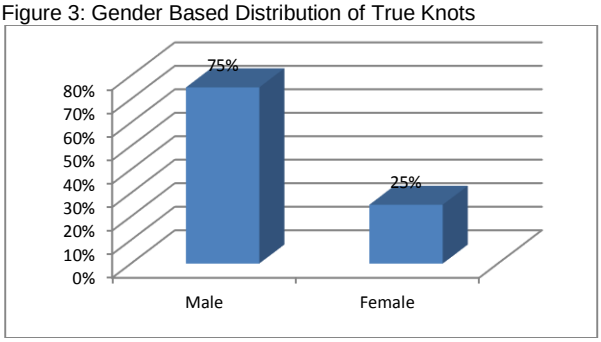


Figure 4: Distribution of Knots on the umbilical cord

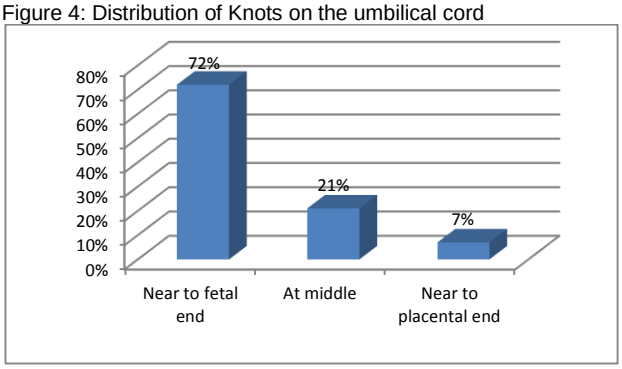


Figure 5: A True Umbilical Cord knot

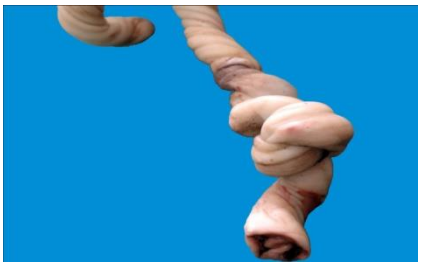


Figure 6: A False Umbilical Cord knot

Figure 7: A False Umbilical Cord knot

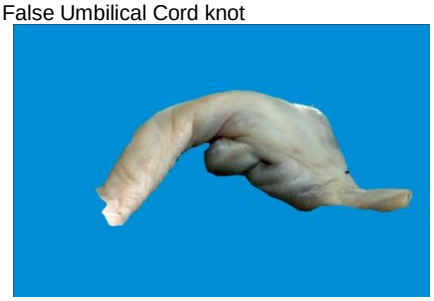
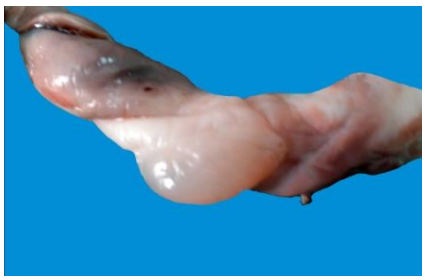


Figure 8: A False Umbilical Cord knot

Figure 9: A False Umbilical Cord knot

Figure10: A False Umbilical Cord knot



DISCUSSION

This study was conducted on 100 samples of placentae along with umbilical cord, showed that frequency of Knots was 14%. The results were nearly similar to a study conducted in Sudan. Where frequency of knots was 12.8%[5] probably because of similarity in demography and ethnicity, access to health care. These results were in contrast to another study conducted in Iraq where frequency of umbilical cord knots was 5.3%[4]. May be because of difference of ethnic and socio demographic factors. These result were also contrasting to studies conducted in USA (0.4-3%)[9]. Europe (1.2%)[8] and in Romania prevalence of umbilical cord knots was (1.3%)[7]. This study concluded that out of all placentae 10% were false knots and 4% were true knots these finding were also similar to a study conducted in Sudan where false knots has frequency of 11.6% and true knots 1.2%. Regarding gender distribution of false knots, 70% were found in male babies and out of all true knots 75% were found in male babies. These results were similar to study conducted in Sudan were majority of knots were found in male babies[5]. These result were similar to a study conducted in Europe, where knots were more prevalent in male babies[7]. Regarding location of knots on the umbilical cord, 72% of all cords were near the fetal end and this finding was nearly similar to study of Sudan were 66% of knots were near the fetal end[1]. As far as relation of knots with maternal age is concerned our study showed highly significant relation between age of mother >30 and frequency of knots. This was similar to study in Sudan where statistically significant relation was found between advanced maternal age and formation of knots.[5]These result were similar to study in Romania where knots were associated with advanced maternal age.[7].Regarding relation of knots with parity, it was proved in our study that statistically significant relation exists between high parity and frequency of knots. This is similar to findings of study conducted in Sudan, were statistically significant relation was found in formation of knots and high parity[5].

Conflict of interest: Nil

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