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Male fetus domination in total placenta previa cases

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Abstract

Objective: The aim of the study is to evaluate the effect of male gender in total placenta previa cases on maternal and perinatal outcomes.

Methods: Total placenta previa cases followed up at the Clinic of Gynecology and Obstetrics between January 2011 and June 2014 were examined retrospectively. All cases were categorized in two groups as male fetus (Group 1) and female fetus (Group 2). Numbers of male and female fetuses, demographic findings, surgical and perinatal outcomes were evaluated among the groups.

Results: 80 total placenta previa patients were included in the study. Out of all cases, 58 (72.5%) were male and 22 (27.5%) were female fetuses, and there was a significant difference between two groups (p<0.001). In male and female fetus groups, respectively, the mean parity was 2.6 and 2.2 (p=0.04), delivery week was 35.3 and 37.1 (p=0.004), mean birth weight was 2752 and 3096 g (p=0.03), number of delivery below 32 weeks was 10 (17%) and 0 (p=0.05), number of transfused patients was 20 (34.5%) and 2 (9%), mean transfusion of erythrocyte suspension was 0.9 and 0.3 (p=0.03) and operation durations in both groups were 70 and 59 minutes; in this regard, there was a significant difference between the groups (p=0.03).

Conclusion: In our study, a distinctive domination of male fetuses was observed in total placenta previa cases. Also, it was found that male fetuses increased poor gestational outcomes in placenta previa.

Keywords: Placenta previa, male fetus.

Özet: Total plasenta previa olgularında erkek fetüs hakimiyeti

Amaç: Çalışmanın amacı total plasenta previa olgularında erkek cinsiyetin maternal ve perinatal sonuçlara etkisini değerlendirmektir.

Yöntem: Ocak 2011 ve Haziran 2014 tarihleri arasında Kadın Hastalıkları ve Doğum Kliniğinde takip edilen total plasenta previa olguları retrospektif olarak incelendi. Tüm olgular, erkek fetüs (Grup 1) ve kız fetüs (Grup 2) olmak üzere iki gruba ayrıldı. Erkek ve kız fetüs sayıları, demografik bulgular, cerrahi ve perinatal sonuçlar gruplar arasında değerlendirildi.

Bulgular: Çalışmaya 80 total plasenta previa hastası dahil edildi. Tüm olguların 58'i (%72.5) erkek ve 22 (%27.5) kız fetüs olmak üzere iki grup arasında anlamlı fark izlendi (p<0.001). Erkek ve kız fetüs gruplarında ortalama parite sırası ile 2.6 ve 2.2 (p=0.04), doğum haftası 35.3 ve 37.1 (p=0.003), ortalama bebek kiloları 2752 ve 3096 gram (p=0.03), 32 hafta altında doğum sayısı 10 (%17) ve 0 (p=0.05), transfüzyon yapılan hasta sayıları 20 (%34.5) ve 2 (%9) (p=0.02), ortalama eritrosit süspansiyonu transfüzyonu 0.9 ve 0.3'ü (p=0.03) ve her iki grupta operasyon süreleri sırası ile 70 ve 59 dakika olarak aralarında anlamlı fark izlendi (p=0.03).

Sonuç: Çalışmamızda total plasenta previa olgularında belirgin erkek fetüs hakimiyeti saptandı. Ayrıca erkek fetüsün plasenta previada kötü gebelik sonuçlarını arttırdığı belirlendi.

Anahtar sözcükler: Plasenta previa, erkek fetüs.

Introduction

Placenta previa is a condition in which placenta reaches to internal cervical os or closes this orifice and it is a risk factor for maternal-fetal morbidity and mortality.[1-3]

The risk factors for placenta previa are reported as advanced maternal age, grand multiparity, recurring abortions, low socio-economical level, infertility treatments, previous curettage, Asherman's syndrome, previous myomectomy, submucous myoma, smoking habit, previous uterine surgery, previous cesarean (C/S) and conception in a short time after cesarean.[4,5]

Placenta accreta is defined as the abnormal invasion of complete or full placenta into myometrium. There

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are three groups according to the depth of the invasion: Accreta, increta, and percreta. Unless it is specifically stated, all these three groups are referred to as placenta accreta in practice. The risk factors of placenta accreta and placenta previa are same. The most significant risk factors for placenta accreta are placenta previa and previous cesarean.[6,7]

In years, the increases in cesarean rates, previous cesarean numbers and maternal ages have caused an increase in the prevalence and aggressiveness of placenta previa and invasive placental diseases. In this way, significant changes appeared in the current practice.[8] While uterine atony was the most frequent reason for postpartum hysterectomy, placenta previa/accreta has taken the first place today.[9]

Therefore, placenta previa and accreta are investigated intensely today. In this study, we evaluated male fetus as one of the risk factors of placenta previa.

Methods

The files of the patients who referred to the Gynecology and Obstetrics Clinic of Kahramanmaraş Sütçü İmam University between January 2011 and June 2014 were reviewed. The pregnant women found to have total placenta previa in our clinic were followed up. Ambulant follow-up was performed with 2 weeks of intervals for those who did not have bleeding and other additional complications. In case of bleeding, pregnant women hospitalized in risky pregnancy service and monitored. Bleedings were categorized as mild and severe according to the blood pressure and pulse, hemoglobin level, fetal well-being and bleeding pad follow-up of the pregnant women. Mild bleedings were followed up. In case of severe bleeding, pregnancy was terminated through cesarean section. The cesarean procedure was carried out electively at 36 weeks of gestation in pregnant women without bleeding.

All cases with total placenta previa were evaluated for placenta accreta by ultrasonography before the operation. Patients suspected to have placenta accreta were referred to urology and cardiovascular surgery clinics before the operation. Before the date of planned cesarean operation, we contacted our blood center to inform the blood type of the patient and made them keep available 4 units of erythrocyte suspension and 2 units of fresh frozen plasma in order to use if necessary.

In the ultrasonography, it was entered to the abdomen through infra-umbilical median incision in pregnant women with placenta accreta risk. Pfannenstiel incision was performed in all other pregnant women. Before the uterine incision, the presence of placenta accreta finding on the uterine wall was investigated. The placenta previa cases having placenta accreta risk and filling anterior wall of uterus inferior segment were delivered by classical incision. In remaining pregnant women, placenta termination limit was determined ultrasonographically before the cesarean procedure and uterine incision was carried out transversely 1–2 cm above this limit. Also, in ultrasonography at gestational follow-ups or during operation, hysterectomy was performed without separating placenta in pregnant women with placental invasion anomaly. Placenta was separated in pregnant women who had no indication for placenta invasion anomaly. Difficult separation and fragmentation of placenta was considered as an indication of invasion.

Bleeding was tried to stop by separate sutures, compression sutures, and uterine and hypogastric arter ligation. Also, when necessary, Foley catheter was applied to the cavity for hemostasis purpose. Emergency hysterectomy was carried out in patients with ongoing bleeding. All postoperative patients were monitored in the intense care unit.

These cases were grouped according to the baby gender (Group 1, male baby; Group 2, female baby). It was investigated if there was a significant difference between these groups in terms of numbers, demographic findings, operation and perinatal outcomes.

Statistical Analysis

Analysis of the data was done by using SPSS (Statistical Package for the Social Sciences version 19 software; IBM, Armonk, NY, USA). $P \leq 0.05$ was considered statistically significant. To compare the rates, hi-square (χ^2), Yates' correction of χ^2, and Fisher's exact tests were used. Variance analysis (F test) was used to compare the mean values of two or more groups.

Results

80 total placenta previa patients were included in the study. In all cases, there was statistically a significant difference between the groups as 58 (72.5%) male fetuses and 22 (27.5%) female fetuses ($p<0.000$) (**Table 1**).

Between two groups, there was no significant difference in terms of mean age, gravida and number of patients with previous C/S.

Mean parity was found as 2.6 and 2.2 in male and female fetus groups, respectively (p=0.04) (**Table 1**).

There was also no significant difference between the groups in terms of emergency C/S, elective C/S and general/spinal anesthesia types. Delivery week was found as 35.3 and 37.1 in two groups, respectively (p=0.003). Mean birth weight was 2752 and 3096 g, respectively (p=0.03). While delivery below 32 weeks of gestation was seen in 10 (17%) patients who delivered male fetuses, no such delivery was seen in patients who delivered female fetuses (p=0.05). C/S hysterectomy, placenta accreta and surgical complications were similar in both groups.

The number of patients who undergone erythrocyte suspension (ES) transfusion was 20 (34.5%) and 2 (9%), respectively (p=0.02). Mean ES transfusion amount was 0.9 and 0.3 unit in two groups, respectively (p=0.03).

Operation durations in both groups were 59 and 70 minutes, respectively, and there was a significant difference (p=0.03). In both groups, hospitalization durations and postoperative baby Apgar scores were similar.

Table 1. Comparison of the demographic characteristics of male and female fetuses in placenta previa.

Variable	Male fetus (s=58)	Female fetus (s=22)		p value
Number	58	22	χ^2	0.000
Age	30.6±4.7	30.9±7.1	t= -0.2	0.8
Parity	2.6±0.8	2.2±0.8	t=2	0.04
Gravidity	3.8±1.5	3.6±1.8	t=0.4	0.6
Previous C/S patient number	46 (79.3%)	18 (81.8%)	χ^2=0.06	1

C/S: Cesarean section

Discussion

In the literature, there are studies showing that male fetus is a risk factor for placenta previa. In 6 studies performed in the past reported that male gender caused a slight risk increase in placenta previa.[10-15] Demissie et al. found in their study carried out in 1999 that male/female rate was 1.05 in 445,270 deliveries without placenta previa while it was significantly high as 1.19 in 2685 deliveries with placenta previa (p<0.001). By adding previous 6 studies to this study, male/female rate was reported as 1.14 in placenta previa cases.[16] Wen et al. evaluated 433,031 deliveries and found male/female rate as 1.04 while it was 1.19 in placenta previa cases (p<0.02).[17] Rosenberg et al. compared 184,705 cases without placenta previa to 771 placenta previa cases and found no difference in terms of gender (p=0.3).[18] However, all placenta previa patients including mild placenta previa cases such as partial and inferior segment were included in these studies. We did not find any study evaluating male/female rate only in total placenta previa patients.

In our study that we performed on pregnant women with total placenta previa, we found high level of male gender dominance (p<0.000, RR:2.63) (**Table 1**). We believe that there are two reasons for high level of male gender dominance compared to previous studies:

1. In our study, unlike previous studies, we evaluated only the cases with total placenta previa. If male fetus is a risk factor in placenta previa, it will certainly be more distinct in total placenta previa which is completely clinical.
2. In our study, we observed that male fetus increased poor gestational outcomes. Mean gestational week at delivery and birth weight were found lower in male fetuses. Also, deliveries below 32 weeks of gestation were at the statistical significance threshold (p=0.05). Also, the number of patients who received transfusion, mean amount of transfusion and operation durations were higher in male fetuses. The number of patients who delivered below 32 weeks of gestation was higher in male fetuses; however, the difference was on significance threshold (p=0.05) (**Table 2**).

Table 2. Comparison of the gestational outcomes of male and female fetuses in placenta previa.

	Male fetus (s=58)	Female fetus (s=22)		p value
Emergency cesarean	36 (62%)	12 (54.5%)	χ^2=0.4	0.35
Elective cesarean	22 (38%)	10 (45.4%)	χ^2=0.4	0.6
Anesthesia type				
General anesthesia	46 (79.3%)	18 (81.8%)	Fischer test	1
Spinal anesthesia	12 (20.9%)	4 (18.1%)	Fischer test	1
Delivery week	35.3±3.2	3.1±1.1		0.003
Birth week	2752.3±685	3096.4±491.8	t=-2.1	0.03
Delivery at <32 weeks of gestation	10 (17.2%)	0	t=-2.1	0.05
Cesarean hysterectomy	9 (15.5%)	1 (4.5%)	χ^2=2.2	0.2
Placenta accreta	9 (15.5%)	1 (4.5%)	χ^2=2.2	0.2
Bladder injury	2 (3.4%)	0	χ^2=0.7	1
Number of patients who underwent ES transfusion	20 (34.5%)	2 (9%)	χ^2=5.2	0.02
Mean ES transfusion	0.9±1.5	0.3±0.9		0.03
Operation duration (min)	59±17.7	70.17±22.3		0.039
Hospitalization (day)	3.3±1.5	3.9±1.7		0.196
1-minute APGAR score	7.9±1.3	7.7±1.7	t=0.4	0.6
5-minute APGAR score	9.3±0.6	8.9±1.6	t=1.2	0.2

ES: Erythrocyte suspension

In conclusion, male fetus increases poor gestational outcomes in placenta previa. In fact, the incidence, risk factors and complications of placenta previa have increased within years:

- **Advanced maternal age:** Pregnancy above 35-year-old has increased from 5% to 13% between 1970 and 2000 in the USA, and the mean age of being mother for the first time increased from 21.4 to 25 between 1970 and 2006.[19]
- **Increases in cesarean rates:** While cesarean rate in developed countries was 18.6% in 1992, it increased to 27.7% in 2007.[20] The increase in undeveloped countries has a higher rate. Previous C/S rate has increased 65% over the years.[21]
- **Increase of plasenta previa cases:** Faiz et al. found in their study that placenta previa cases increased within 22 years from 1976 to 1997.[22]
- **Increase of plasenta accreta cases:** Placenta invasion anomaly was first defined in 1930, and it was a rare disease before these years.[23] Its incidence reached 1/2500 with a 10-time increase within last five decades.[24] Recently, its incidence is reported up to 3/1000.[25]
- **Increase in peripartum hysterectomy cases:** In the study of Bodelon et al., it was reported that the incidence of hysterectomy which was carried out within peripartum first 30 days increased to 0.82/1000 deliveries in 2006 from 0.25/1000 in 1987 ($p<0.001$).[26]

These results show that placental implantation and invasion anomalies progress more aggressively over the years. We believe that male fetus dominance has become clear over the years depending on the more aggressiveness of placental implantation and invasion anomalies. However, the number of cases in our study is insufficient.

In the literature, we did not found any study investigating the effect of male fetus on perinatal outcomes in placenta previa. In their study, Wen et al. found no significant difference between fetal genders in placenta previa and birth weights and delivery weeks.[17] We concluded in our study that male fetus is a risk factor for total placenta previa and it increases poor gestational outcomes. Wider case series are needed to investigate on this matter.

Conclusion

In conclusion, we observed male fetus dominance in placenta previa. Also, we determined that male fetuses increased poor gestational outcomes in placenta previa. We believe that this depends on the aggressiveness of placental implantation and invasion anomalies over the years.

Conflicts of Interest: No conflicts declared

References

1. Crane JM, van den Hof MC, Dodds L, Armson BA, Liston R. Neonatal outcomes with placenta previa. Obstet Gynecol 1999;93:541–4.
2. Ananth CV, Smulian JC, Vintzileos AM. The effect of placenta previa on neonatal mortality: a population-based study in the United States, 1989 through 1997. Am J Obstet Gynecol 2003;188:1299–304.
3. Salihu HM, Li Q, Rouse DJ, Alexander GR. Placenta previa: neonatal death after live births in the United States. Am J Obstet Gynecol 2003;188:1305–9.
4. Xiaojing J, Ying W, Khan I. Clinical analysis of 322 cases of placenta previa. Journal of Medical Colleges of PLA 2009; 24:366–9.
5. Rosenberg T, Pariente G, Sergienko R, Wiznitzer A, Sheiner E. Critical analysis of risk factors and outcome of placenta previa. Arch Gynecol Obstet 2011;284:47–51.
6. Usta IM, Hobeika EM, Musa AA, Gabriel GE, Nassar AH. Placenta previa-accreta: risk factors and complications. Am J Obstet Gynecol 2005;193:1045–9.
7. Jauniaux E, Jurkovic D. Placenta accreta: pathogenesis of a 20th century iatrogenic uterine disease. Placenta 2012;33: 244–51.
8. Flood KM, Said S, Geary M, Robson M, Fitzpatrick C, Malone FD. Changing trends in peripartum hysterectomy over the last 4 decades. Am J Obstet Gynecol 2009;200:632.e1–632.e6
9. Wright JD, Bonanno C, Shah M, Gaddipati S, Devine P. Peripartum hysterectomy. Obstet Gynecol 2010;116:429–34.
10. Record RG. Observations related to the aetiology of placenta praevia, with special reference to the influence of age and parity. Br J Prev Soc Med 1956;10:19–24.
11. Jakobovits AA, Zubek L. Sex ratio and placenta praevia. Acta Obstet Gynecol Scand 1989;68:503–5.
12. MacGillivray I, Davey D, Isaacs S. Placenta praevia and sex ratio at birth. Br Med J (Clin Res Ed) 1986;292:371–2.
13. Brenner WE, Edelman DA, Hendricks CH. Characteristics of patients with placenta previa and results of "expectant management". Am J Obstet Gynecol 1978;132:180–91.
14. Hibbard BM. Foetal sex in antepartum haemorrhage. Lancet 1965;2:955–6.
15. Rhodes P. Sex of the foetus in antepartum haemorrhage. Lancet 1965;2:718–9.
16. Demissie K, Breckenridge MB, Joseph L, Rhoads GG. Placenta previa: preponderance of male sex at birth. Am J Epidemiol 1999;149:824–30.

17. Wen SW, Demissie K, Liu S, Marcoux S, Kramer MS. Placenta praevia and male sex at birth: results from a population-based study. Paediatr Perinat Epidemiol 2000;14:300–4.
18. Rosenberg T, Pariente G, Sergienko R, Wiznitzer A, Sheiner E. Critical analysis of risk factors and outcome of placenta previa. Arch Gynecol Obstet 2011;284:47–51.
19. Martin JA, Hamilton BE, Ventura SJ, Osterman MJ, Kirmeyer S, Mathews TJ, et al. Births: final data for 2009. Natl Vital Stat Rep 2011;60(1):1–70.
20. Declercq E, Young R, Cabral H, Ecker J. Is a rising cesarean delivery rate inevitable? Trends in industrialized countries, 1987 to 2007. Birth 2011;38:99–104.
21. Fairley L, Dundas R, Leyland AH. The influence of both individual and area based socioeconomic status on temporal trends in Caesarean sections in Scotland 1980-2000. BMC Public Health 2011;11:330.
22. Faiz AS, Ananth CV. Etiology and risk factors for placenta previa: an overview and meta-analysis of observational studies. J Matern Fetal Neonatal Med 2003;13:175–90.
23. Hertig IC. A study of placenta accreta. J Surg Gynecol Obstet 1937;64:178–200.
24. ACOG Committee on Obstetric Practice. ACOG Committee opinion. Number 266, January 2002: placenta accreta. Obstet Gynecol 2002;99:169–70.
25. Publications Committee, Society for Maternal-Fetal Medicine, Belfort MA. Placenta accreta. Am J Obstet Gynecol 2010;203:430–9.
26. Bodelon C, Bernabe-Ortiz A, Schiff MA, Reed SD. Factors associated with peripartum hysterectomy. Obstet Gynecol 2009;114:115–23.