



# Retrospective analysis of the indications, methods, and complications of pregnancy termination

## Gebelik terminasyonlarının endikasyon, yöntem ve komplikasyonlarının retrospektif analizi

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### Abstract

**Objective:** To evaluate the indications and methods of termination of pregnancy (TOP) and to identify maternal complications that occur during TOP.

**Materials and Methods:** This retrospective study was conducted at a single tertiary center with a total of 231 patients who underwent TOP from April 2019 to March 2023. The patients were divided into two groups based on gestational age at the time of TOP and the presence of complications. Group 1 consisted of patients with a gestational age of 11-22+6 weeks (n=196), while Group 2 comprised patients with a gestational age of 23-30 weeks (n=35). Additionally, the patients were categorized based on complications into those with complications (n=63) and those without complications (n=168). The TOP protocol involves misoprostol, a uterine balloon, a combination of misoprostol and balloon, or oxytocin. Procedure-related complications included the following: Rehospitalization, rest placenta, infection, uterine rupture, blood transfusion, and repeated manual vacuum curettage.

**Results:** The median gestational age at TOP was 18.0±3.3 weeks for women without complications and 19.5±5.1 weeks for those with complications, it was 19.5±5.1 weeks (p=0.037). In the group with complications, the combined misoprostol-balloon method was used significantly more frequently, and the rate of previous cesarean sections was higher (p<0.05). The induction time was longer in the oxytocin group (p<0.05). The misoprostol-balloon combination group had the highest rate of uterine rupture (p<0.05).

**Conclusion:** TOP during advanced gestation is associated with increased rates of maternal complications, such as increased transfusion, uterine rupture, and hysterotomy. Higher gestational age and previous uterine surgery are the main causes of TOP-related maternal complications.

**Keywords:** Fetal defect, maternal complications, prenatal screening, termination of pregnancy

### Öz

**Amaç:** Gebelik terminasyonlarının (GT) endikasyonlarını ve yöntemlerini değerlendirmek ve GT sırasında ortaya çıkan maternal komplikasyonları belirlemek.

**Gereç ve Yöntemler:** Bu retrospektif çalışma, Nisan 2019 ile Mart 2023 arasında GT uygulanan toplam 231 hasta ile üçüncü basamak merkezde yürütülmüştür. Hastalar, GT sırasındaki gebelik haftası ve komplikasyonların varlığına göre iki gruba ayrılmıştır. Grup 1, gebelik haftası 11-22+6 hafta olan hastalardan (n=196) oluşurken, Grup 2, gebelik haftası 23-30 hafta olan hastalardan (n=35) oluşmuştur. Ek olarak, hastalar komplikasyonlara göre komplikasyon gelişenler (n=63) ve komplikasyon gelişmeyenler (n=168) olarak kategorize edilmiştir. GT protokolü misoprostol, uterin balon veya misoprostol-balon kombinasyonu veya oksitosin içermektedir. İşlemlerle ilişkili komplikasyonlar şunları içermektedir: Tekrar hastaneye yatış, rest plasenta, enfeksiyon, uterin rüptür, kan transfüzyonu ve tekrar manuel vakum küretaj.

**Bulgular:** Komplikasyon gelişmeyen grupta medyan gebelik terminasyon haftası 18,0±3,3 iken, komplikasyon gelişen grupta 19,5±5,1 hafta idi (p=0,037). Komplikasyon gelişen grupta kombine misoprostol-balon yöntemi önemli ölçüde daha sık kullanılmıştı ve geçirilmiş sezaryen oranı daha yüksekti (p<0,05). Oksitosin grubunda indüksiyon süresi daha uzundu (p<0,05). Uterin rüptür oranı misoprostol-balon kombinasyon grubunda en yüksek saptandı (p<0,05).

**Sonuç:** İleri gebelik haftasında GT, artmış transfüzyon ihtiyacı, artmış uterin rüptür ve hysterotomi gibi maternal komplikasyonlarla ilişkilidir. İleri gebelik haftası ve geçirilmiş uterin cerrahi, GT ile ilişkili maternal komplikasyonların ana nedenlerindedir.

**Anahtar Kelimeler:** Fetal defekt, maternal komplikasyonlar, prenatal tarama, gebelik terminasyonu

**PRECIS:** Termination of pregnancy in advanced gestation is associated with increased maternal complications such as increased transfusion, uterine rupture, and hysterotomy.

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## Introduction

Congenital anomalies include fetal structural and functional disorders<sup>(1,2)</sup>. Major fetal anomalies are detected in 2-3% of all live births<sup>(1)</sup>. The incidence rate of fetal anomalies leading to intrauterine pregnancy loss and termination of pregnancy (TOP) can reach 4-5%<sup>(2)</sup>. Through the efforts to include every pregnant woman in modern obstetric care and pregnancy follow-up and the enhanced utilization of technology in obstetric examinations, the detection of fetal structural defects has increased and become possible in earlier weeks of pregnancy<sup>(3)</sup>. Even life-compatible forms of structural fetal defects cause parents to reassess their decisions concerning the continuation of pregnancy because of the difficulty in determining the prognosis of the newborn's mental state at later ages<sup>(4)</sup>. The advancement of technology and its subsequent implementation in obstetrics have led to the development of antenatal screening tests and the increased detection of fetal and chromosomal abnormalities in the antenatal period through the widespread utilization of comprehensive anatomical screening at 18-22 weeks of gestation<sup>(5)</sup>. Consequently, parents and their relatives are now confronted with more situations that may necessitate the consideration of TOP.

In our country, the consent of the mother and father is sufficient for TOP within the first 10 weeks of pregnancy (law no. 2827-5, 1983 Population Planning Law). For TOP at 10 weeks of gestation and above, signatures from at least two specialist physicians or a council decision are required. While pregnancy termination is performed upon the request of patients in 113 countries worldwide, it is prohibited in 86 countries<sup>(6,7)</sup>. TOP requires addressing medical problems and social, ethical, and belief-related issues. Medical problems are encountered when determining the reasons for pregnancy termination, both during and after the termination process<sup>(8)</sup>. Maternal diseases, previous surgery, and increased gestational age have been reported to increase the rate of complications at every stage of the termination process<sup>(9)</sup>. Nevertheless, only a limited number of studies exist, and these studies show considerable inconsistencies regarding the maternal outcomes of first- and second-trimester abortion in heterogeneous groups<sup>(10)</sup>.

This study aimed to analyze TOP data from our clinic, which has substantial experience in TOP, and to identify and present the dependent factors that contribute to the incidence of complications during termination management.

## Materials and Methods

This retrospective study was conducted at a single tertiary hospital. Patients between the ages of 18-44 years who underwent pregnancy termination in the high-risk pregnancies unit of the tertiary center from April 2019 to March 2023 were included in the study. The principles of the Declaration of Helsinki were followed. Approval for the study was received from the Ankara Bilkent City Hospital Clinical Research Ethics Committee (decision no: E2-23-3732, date: 27.03.2023).

All patients who were included signed an informed consent form.

The clinicodemographic data of the patients, body mass index (BMI) values, gestational week at which fetal anomalies were diagnosed, indications for termination, gestational week at which pregnancy was terminated, termination methods, length of hospital stay, hemoglobin level before and after the procedure, delta hemoglobin value as an indicator of the change in the amount of hemoglobin, and complications that occurred during and after the procedure were retrospectively recorded by screening the hospital's database. Complications included uterine rupture, resting placenta, rehospitalization, infection treatment, and repeated manual vacuum curettage.

Patients with multiple pregnancies and those with intrauterine pregnancy loss detected before hospitalization for pregnancy termination were excluded from the study. The patients included in the study were divided into two groups according to the gestational age at the time of termination. Group 1 [from the earliest week included in the study (11 weeks) to the 22<sup>nd</sup> week of gestation corresponding to the viability limit in terms of estimated fetal weight] and Group 2 (from the 23<sup>rd</sup> gestational week to the 30<sup>th</sup> gestational week, which was the latest gestational week included in the study). Pregnancies presenting with more than one anomaly were classified by considering the primary indication leading to pregnancy termination. We grouped patients with neural tube defects separately because of their large number and broad clinicophysiological outcomes.

Our hospital is an important multidisciplinary, tertiary reference center serving approximately 8-9 million individuals, including those living in nearby provinces. Patients are referred to TOP due to fetal anomalies or maternal diseases detected either during routine examinations or during secondary anatomical screening performed at 18-22 weeks of gestation. Antenatal screening tests and detailed anatomical screening at 18-22 weeks of gestation are undertaken with an ultrasound examination in all pregnant women who are followed up. Detailed counseling is provided to patients whose pregnancy is to be terminated for any reason. Chromosomal analysis is performed on samples obtained via chorionic villus sampling, amniocentesis, or cordocentesis. Patients undergo a thorough evaluation by a multidisciplinary council of experts from branches relevant to the characteristics of fetal anomaly and maternal disease, with the routine participation of specialists in perinatology, genetics, and neonatology. The termination process begins with obtaining signatures from the mother and father on a detailed consent form. All pregnancy terminations are performed in the high-risk pregnancy unit of our hospital. There is no gestational age limit for TOP in our country.

The method used in our unit for pregnancy termination consists of the misoprostol protocol according to international guidelines and balloon application using a Foley catheter, depending on gestational age and uterine surgery history<sup>(11-13)</sup>. In patients with detected induction failure and a history of three

or more cesarean sections, direct hysterotomy is performed. In later weeks of gestation, TOP may be preferred by administering oxytocin. A signature is obtained on the informed consent form indicating the methods and medications to be administered before termination. The decision to fetulate is made according to the estimated fetal weight and gestational age when the fetus is above the viability limit (above 21-22<sup>nd</sup> weeks of gestation). Manual vacuum curettage is performed in cases where retained products of conception are suspected after termination.

**Statistical Analysis**

SPSS v. 22.0 (SPSS Inc., Chicago, IL, USA) was used for data analysis. The Kolmogorov-Smirnov and Shapiro-Wilks tests were used to analyze the suitability of the data for a normal distribution. The chi-square test was used to compare categorical variables. Student’s t-test was used to compare normally distributed variables. Descriptive statistics are presented as means, standard deviations, and percentages. A p-value 0.05 was considered statistically significant.

**Results**

A total of 231 patients who underwent pregnancy termination were included in the study. There were 196 patients in Group 1 (11-22<sup>6/7</sup> weeks of gestation) and 35 patients in Group 2 (23-30 weeks). Age, gravida, parity, and miscarriage rates were similar in both groups, and there was no statistically significant difference. However, there was a statistically significant difference in BMI (p=0.044) (Table 1).

The length of hospital stay of the patients in both groups was similar, and there was no statistically significant difference (p=0.430). No statistically significant difference was found between the pre-and post-termination hemoglobin levels of Groups 1 and 2 or the delta hemoglobin values showing the change in hemoglobin (Table 1).

No significant difference was observed throughout the groups for the gestational age at which the anomaly or maternal disease that caused the TOP was diagnosed (p=0.564); however, the gestational age at which pregnancy was terminated statistically significantly differed (p<0.001).

The most common indication for TOP in group 1 was neural tube defect (27%), followed by anhydramnios (22.9%), other anomalies originating from the central nervous system (CNS) (15.8%), trisomies (13.3%), and other anomalies originating from the skeletal-muscular system (7.7%). Similarly, in group 2, neural tube defect (45.7%) constituted the most common indication of TOP, and this was followed by fetal cardiac diseases (34.3%), trisomies (11.4%), anhydramnios (5.7%), and other anomalies originating from the CNS (2.9%) (Table 2).

The rates of rehospitalization and systemic infections were similar between the two groups. However, the rate of rest placenta after TOP was significantly higher in group 2 (10.2% vs. 37.1%, p<0.001). The repeat manual vacuum curettage rate was significantly higher in group 2 than in group 1 (8.7% vs. 22.9%, p<0.013). The rate of uterine rupture during TOP was significantly higher in group 2 than in group 1 (p=0.012). The requirement for blood transfusion

**Table 1.** Gestational age at diagnosis and termination, length of hospital stay, and clinicodemographic data of patients undergoing cesarean delivery

	Group 1 (11-22 <sup>6/7</sup> weeks of gestation) (n=196)	Group 2 (23-30 weeks of gestation) (n=35)	p-value
Age in years (n)	29.8±5.8	28.8±6.8	0.702
Gravida (n)	2.3±1.3	2.8±1.7	0.171
Parity (n)	1.04±1.07	1.23±1.3	0.361
Miscarriage (n)	0.4±0.9	0.5±0.8	0.310
BMI (kg/m <sup>2</sup> )	26.7±2.8	27.8±3.4	0.044
Termination week	17.3±3.1	24.8±1.9	0.000
Termination duration (hour)	12.3±10.1	11.1±6.2	0.373
Feticide (n, %)	34 (17.3%)	35 (100%)	0.000
History of previous cesarean section (n)	40 (20.4%)	8 (22.8%)	0.356
Length of hospital stay (day)	3.4±2.5	3.0±1.2	0.430
Week after diagnosis	14.2±2.3	21.6±1.4	0.564
Pre-termination hemoglobin (g/dL)	11.9±1.2	11.5±1.4	0.132
Post-termination hemoglobin (g/dL)	10.2±1.3	9.9±1.2	0.187
Delta hemoglobin	1.6±1.4	1.6±1.5	0.961

BMI: Body mass index

during pregnancy termination was significantly higher in group 2 than in group 1 ( $p=0.009$ ) (Table 3).

The complication rate during TOP was 27.2% ( $n=63$ ). In women without complications, the median gestational age at TOP was  $18.0\pm 3.3$  weeks, whereas in those with complications, it was  $19.5\pm 5.1$  weeks ( $p=0.037$ ) (Table 4). In the group with complications, the combined misoprostol-balloon method was used significantly more frequently as a termination method, and the rate of previous cesarean section was higher ( $p<0.01$ ,  $p<0.034$ ).

The induction time was longer in the oxytocin group. The misoprostol-balloon combination group had the highest rate

of uterine rupture ( $p=0.012$ ) (Table 5). The hysterotomy rates did not differ between the groups. In the group that used the combination method (misoprostol and balloon), the hysterotomy rate was 8.3%; in the group that terminated the balloon method, the hysterotomy rate was 0%; in the group that terminated the balloon method, the hysterotomy rate was 10%. None of the patients developed complications requiring hysterectomy. There was no maternal deterioration that required follow-up in the intensive care unit or resulted in maternal death.

**Table 2.** Indications for pregnancy termination

Variables	Group 1 (11-22 <sup>6/7</sup> weeks of gestation) ( $n=196$ )	Group 2 (23-30 weeks of gestation) ( $n=35$ )
Trisomies (n)	26 (13.3%)	4 (11.4%)
Fetal cardiac anomaly (n)	15 (7.7%)	12 (34.3%)
Neural tube defect (n)	53 (27.0%)	16 (45.7%)
Other CNS anomalies (n)	31 (15.8%)	1 (2.9%)
PPROM-anhydramnios (n)	45 (22.9%)	2 (5.7%)
Renal agenesis (n)	6 (3.0%)	0 (0.0%)
Musculoskeletal disorders (n)	7 (7.7%)	0 (0.0%)
Maternal diseases (n)	5 (2.6%)	0 (0.0%)

CNS: Central nervous system, PPRM: Preterm prelabour rupture of membranes

**Table 3.** Analysis of the termination-related complications in the study groups

Variables	Group 1 (11-22 <sup>6/7</sup> weeks of gestation) ( $n=196$ )	Group 2 (23-30 weeks of gestation) ( $n=35$ )	p-value
Rehospitalization	18 (9.2%)	5 (14.3%)	0.353
Rest placenta	20 (10.2%)	13 (37.1%)	<0.001
Systemic infection	8 (4.1%)	2 (5.7%)	0.651
Uterine rupture	1 (0.5%)	2 (5.7%)	0.012
Blood transfusion	3 (1.5%)	4 (11.4%)	0.009
Repeat vacuum curettage	17 (8.7%)	8 (22.9%)	0.013

**Table 4.** Characteristics of the no-complication and complication groups

	No-complication group ( $n=168$ )	Complication group ( $n=63$ )	p-value
Maternal age (years)	$29.6\pm 5.8$	$28.0\pm 6.3$	0.070
Gestational age at TOP (week)	$18.0\pm 3.3$	$19.5\pm 5.1$	0.037
<b>Gestational age at the TOP</b>			0.027
11-22 <sup>6/7</sup> week	76.5% (150/196)	23.5% (46/196)	
23-30 weeks	51.4% (18/35)	49.6% (17/35)	

**Table 4.** Continued

	No-complication group (n=168)	Complication group (n=63)	p-value
<b>TOP protocol: 11-22<sup>6/7</sup> weeks</b>			<0.001
Misoprostol	104/150 (69.3%)	24/46 (52.1%)	
Balloon	21/150 (14.0%)	7/46 (15.2%)	
Combination (misoprostol + balloon)	22/150 (14.6%)	9/46 (19.5%)	
Oxytocin	3/150 (2.0%)	6/46 (13.0%)	
<b>TOP protocol 23-30 weeks</b>			<0.001
Misoprostol	7/18 (38.8%)	6/17 (35.2%)	
Balloon	3/18 (16.6%)	4/17 (23.5%)	
Combination (misoprostol + balloon)	3/18 (16.6%)	3/17 (17.6%)	
Oxytocin	5/18 (27.7%)	4/17 (23.5%)	
Body mass index (kg/m <sup>2</sup> )	26.8±2.8	26.7±3.1	0.959
Gravidity	2.4±1.4	2.5±1.4	0.977
Parity	1.0±1.1	1.2±1.1	0.754
Previous cesarean section	71/168 (42.3%)	36/63 (57.1%)	0.043
TOP: Termination of pregnancy			

**Table 5.** Comparison of the complications of termination methods

Variables	Misoprostol (n=30)	Balloon (n=11)	Combination (misoprostol + balloon) (n=12)	Oxytocin (n=10)	p-value
Induction time (hours)	9.3 (7.2-16.5)	10.3 (8.9-17.3)	12.8 (9.4-21.5)	14.8 (7.6-19.1)	0.018
Rehospitalization	12 (40%)	3 (27.2%)	3 (25%)	4 (40%)	0.353
Rest placenta	8 (26.6%)	4 (36.3%)	4 (33.3%)	3 (30%)	0.822
Systemic infection	5 (16.6%)	1 (9.0%)	2 (16.6%)	1 (10%)	0.651
Uterine rupture	0 (0%)	0 (0%)	3 (25%)	0 (0%)	0.012
Blood transfusion	3 (10%)	1 (9.0%)	2 (16.6%)	1 (10%)	0.349
Repeat vacuum curettage	6 (20%)	2 (18.1%)	3 (25%)	2 (20%)	0.980
Hysterotomy	5 (16.6%)	0 (0%)	1 (8.3%)	1 (10%)	0.507

**Discussion**

This study aimed to examine the indications and methods of TOP, complications during and after the procedure, and factors predicting these complications. The most common reason for termination was found to be CNS anomalies. Maternal complications, such as rest placenta, uterine rupture, and transfusion need, were more frequent in terminations at an advanced gestational age. Misoprostol-balloon method was associated with higher TOP-related uterine rupture.

TOP is a process in which difficult decisions are made for family and relatives<sup>(14)</sup>. This process’s medical and social management, which is closely affected by social rules, traditions, beliefs, and

laws, poses difficulties for families and healthcare providers<sup>(15-17)</sup>. Previous studies have identified CNS defects as the predominant cause of TOP during the second and third trimesters<sup>(18-20)</sup>. In the current study, neural tube defects and other CNS anomalies were the most common reasons for TOP in both groups, which is similar to the results of many related studies. Concerning hysterotomy performed due to pregnancy termination, Aslan et al.<sup>(21)</sup> reported non-significant rates. Similarly, we found no significant difference in the hysterotomy rates between the groups. Although no difference was observed between the groups in terms of the week of diagnosis of the anomaly or maternal disease that led to termination, differences were noted in the weeks of pregnancy termination. These results

could be attributed to the prolonged decision-making process of patients diagnosed at earlier stages of pregnancy and the misconception that the identified issue can be remedied with further advancement in gestational weeks.

Another finding of our study was that the rate of feticide applied for pregnancy termination increased as the gestational age approached the fetal survival limit, resulting in a significant difference between the groups. This finding is in agreement with previous studies<sup>(19,22)</sup>. Special conditions caused by the physiology of pregnancy and obstetric history affect the rates of complications that may occur during pregnancy termination<sup>(23)</sup>. Research on maternal complications that occur during pregnancy termination has shown that increasing gestational age, previous surgery, and the number of previous surgical procedures are associated with possible complications<sup>(24,25)</sup>. In this study, we observed a significantly higher rate of rest placenta and the subsequent requirement of repeat manual vacuum curettage among patients who underwent pregnancy termination in advanced weeks of gestation (especially later than the 22<sup>nd</sup> week). Although this rate was similar to that reported by Garofalo et al.<sup>(9)</sup>, Spingler et al.<sup>(25)</sup> found no difference in the rate of blood transfusion requirement between the termination method groups. In a study conducted by Garofalo et al.<sup>(9)</sup>, the rate of uterine rupture was found to be non-significant. In contrast, our groups significantly differed in terms of the uterine rupture rate. All patients with ruptures had previously undergone at least one cesarean section.

We also observed that blood transfusion requirement increased with gestational age and the number of previous cesarean sections. The rate of blood transfusion requirement we determined is different from the data presented by Spingler et al.<sup>(25)</sup>. Our study showed that CNS abnormalities are the main cause of top TOP and that maternal complications, such as repeated manual curettage and uterine rupture, increase in late TOP. This situation emphasizes the importance of making the decision for TOP as early as the first week of pregnancy and taking a multidisciplinary approach because many factors can influence the decision. The complication rates varied depending on the termination method. The misoprostol + balloon combination was found to be associated with serious complications, such as uterine rupture. The balloon plus misoprostol method is generally preferred in advanced-stage pregnancy and in patients undergoing previous uterine surgery. Therefore, the high complication rate may depend on the week of pregnancy when the method is used<sup>(25)</sup>.

A strength of our study is that the indications for TOP, termination methods, and maternal complications were examined in detail in the same study.

### Study Limitations

Our study had some limitations, including its retrospective design and reliance on data from a single center.

### Conclusion

Each patient who will undergo pregnancy termination should be evaluated individually, including the gestational age at which the procedure will be performed and their obstetric history. TOP during advanced gestation is associated with increased maternal complications, such as increased transfusion, uterine rupture, and hysterotomy.

### Ethics

**Ethics Committee Approval:** Approval for the study was received from the Ankara Bilkent City Hospital Clinical Research Ethics Committee (decision no: E2-23-3732, date: 27.03.2023).

**Informed Consent:** All patients who were included signed an informed consent form.

### Footnotes

#### Authorship Contributions

Surgical and Medical Practices: Z.A., M.H., H.C., G.İ., Concept: Z.A., A.T., M.H., H.C., G.İ., R.D., Ö.K., D.Ş., Design: Z.A., A.T., M.H., H.C., G.İ., R.D., Ö.K., D.Ş., Data Collection or Processing: Z.A., M.H., H.C., G.İ., Analysis or Interpretation: Z.A., A.T., M.H., H.C., Ö.K., D.Ş., Literature Search: Z.A., M.H., H.C., Writing: Z.A., A.T., M.H., G.İ., Ö.K., D.Ş.

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### References

1. Edwards L, Hui L. First and second trimester screening for fetal structural anomalies. *Semin Fetal Neonatal Med.* 2018;23:102-11.
2. Whitworth M, Bricker L, Mullan C. Ultrasound for fetal assessment in early pregnancy. *Cochrane Database Syst Rev.* 2015;2015:Cd007058.
3. Aldridge N, Pandya P, Rankin J, Miller N, Broughan J, Permalloo N, et al. Detection rates of a national fetal anomaly screening program: a national cohort study. *BJOG.* 2023;130:51-8.
4. Heaney S, Tomlinson M, Aventin Á. Termination of pregnancy for fetal anomaly: a systematic review of the healthcare experiences and needs of parents. *BMC Pregnancy Childbirth.* 2022;22:441.
5. Carmen Prodan N, Hoopmann M, Jonaityte G, Oliver Kagan K. How to perform a second trimester anomaly scan. *Arch Gynecol Obstet.* 2023;307:1285-90.
6. WHO Guidelines Approved by the Guidelines Review Committee. *Abortion care guidelines.* Geneva: World Health Organization; 2013.
7. Lavelanet AF, Johnson BR, Ganatra B. Global Abortion Policies Database: A descriptive analysis of the regulatory and policy environment related to abortion. *Best Pract Res Clin Obstet Gynaecol.* 2020;62:25-35.
8. Boyle J, Eerden PV, McNamara M. Second trimester abortion for fetal anomalies or fetal death: labor induction compared with dilation and evacuation. *Obstet Gynecol.* 2011;118:362-3.

9. Garofalo G, Garofalo A, Sochirca O, Alemanno MG, Pilloni E, Biolcati M, et al. Maternal outcomes in first and second trimester termination of pregnancy: which are the risk factors? *J Perinat Med*. 2018;46:373-8.
10. Rørbye C, Nørgaard M, Vestermark V, Nilas L. Medical abortion. defining success and categorizing failures. *Contraception*. 2003;68:247-51.
11. Combination of mifepristone and misoprostol for the termination of pregnancy. *Int J Gynaecol Obstet*. 2011;115:1-4.
12. ACOG Practice Bulletin No. 200: Early pregnancy loss. *Obstet Gynecol*. 2018;132:e197-207.
13. Emery NJ. Cognitive ornithology: the evolution of avian intelligence. *Philosophical Transactions of the Royal Society B. Biol Sci*. 2006;361:23-43.
14. Lotto R, Smith LK, Armstrong N. Clinicians' perspectives of parental decision-making following diagnosis of a severe congenital anomaly: a qualitative study. *BMJ Open*. 2017;7:e014716.
15. Zareba K, Makara-Studzińska M, Ciebiera M, Gierus J, Jakiel G. The role of social and informational support in determining pregnancy termination for medical reasons. *Int J Environ Res Public Health*. 2018;15.
16. Zareba K, La Rosa VL, Ciebiera M, Makara-Studzińska M, Gierus J, Jakiel G. Psychosocial profile and reproductive decisions among women undergoing pregnancy termination for medical reasons: a cross-sectional study. *Int J Environ Res Public Health*. 2019;16.
17. Yapar EG, Senöz S, Urkütür M, Batioglu S, Gökmen O. Second trimester pregnancy termination including fetal death: comparison of five different methods. *Eur J Obstet Gynecol Reprod Biol*. 1996;69:97-102.
18. Ozyuncu O, Orgul G, Tanacan A, Aktöz F, Guleray N, Fadiloglu E, et al. Retrospective analysis of indications for termination of pregnancy. *J Obstet Gynaecol*. 2019;39:355-8.
19. Maurice P, Letourneau A, Benachi A, Jouannic JM. Feticide use in second- and third-trimester pregnancy termination for fetal anomalies: Results of a national survey. *Prenat Diagn*. 2019;39:1269-72.
20. Koşar Can Ö, Kaleli B. Retrospective clinical evaluation of indications for pregnancies termination due to fetal anomaly. *J Turk Ger Gynecol Assoc*. 2022;23:28-32.
21. Aslan H, Yildirim G, Ongut C, Ceylan Y. Termination of pregnancy for fetal anomaly. *Int J Gynaecol Obstet*. 2007;99:221-4.
22. De Costa CM. Feticide and late pregnancy termination: An essential component of reproductive health care. *Med J Aust*. 2022;217:400-1.
23. Kazma JM, van den Anker J, Allegaert K, Dallmann A, Ahmadzia HK. Anatomical and physiological alterations of pregnancy. *J Pharmacokinet Pharmacodyn*. 2020;47:271-85.
24. Elasy AN, Ibrahim MA, Elhaway LL, Hamed BM. Vaginal misoprostol versus combined intracervical foley's catheter and oxytocin infusion for second trimester pregnancy termination in women with previous cesarean sections: a randomised controlled trial. *J Obstet Gynaecol*. 2022;42:2962-9.
25. Spingler T, Sonek J, Hoopmann M, Prodan N, Abele H, Kagan KO. Complication rate after termination of pregnancy for fetal defects. *Ultrasound Obstet Gynecol*. 2023;62:88-93.
26. Aslam FN, Loveday TA, Junior P, Truty M, Smoot R, Bekaii-Saab T, et al. APRI score is not predictive of post-surgical outcomes in patients with cholangiocarcinoma. *Ann Gastroenterol*. 2024;37:95-103.