Termination of pregnancy and reasons for delayed decisions

Gebelik sonlandırması ve karar almada gecikme nedenleri

Ali Gedikbaşı[1], Ahmet Gül[1], Kazım Öztarhan[2], Mustafa Ali Akın[3], Akif Sargın[1], Sibel Özek[3], Sultan Kavuncuoğlu[3], Yavuz Ceylan[1]

[1]İstanbul Bakırköy Maternity and Children Diseases Hospital, Department of Obstetrics and Gynecology, Perinatology Unit, İstanbul, Turkey

[2]İstanbul Bakırköy Maternity and Children Diseases Hospital, Division of Pediatric Cardiology, İstanbul, Turkey

[3]İstanbul Bakırköy Maternity and Children Diseases Hospital, Division of Neonatology, İstanbul, Turkey

Abstract

Objective: To assess the indications and distribution of cases chosen for termination of pregnancy and reasons delaying until third trimester termination.

Methods: Retrospective study of cases between 2002 and 2006 in the hospital council. Cases were divided in two groups , as early termination (<23 weeks of gestation) and late termination (≥23 weeks of gestation). All pregnant women who underwent termination were classified according to related systemic pathology and chorionicity. Reasons for delaying until third trimester termination were evaluated in four groups.

Results: During this five year period 1.449 complicated pregnancies were counseled and in 713 cases termination was offered. Of 677 cases (94.95%) with termination, 412 cases (60.09%) had early and 265 cases (39.91%) late termination. The most frequent indications were central nervous system abnormalities (51.7%), chromosomal abnormalities (11.7%), and urogenital abnormalities (8.4%). The main reason for delaying termination was failure of screening by ultrasound (65.6%).

Conclusion: Systematic screening for fetal anomalies is the main step for prevention of affected pregnancies. Information given to parents for TOP is important, but the decision for TOP is influenced by many factors. (J Turkish-German Gynecol Assoc 2010; 11: 1-7)

Key words: Prenatal diagnosis, fetal anomaly, pregnancy termination

Received: 29 November, 2009 **Accepted:** 30 January, 2010

Özet

Amaç: Gebelik sonlandırması kararı alınan olguların endikasyonu ve dağılımı ile bu işlemin üçüncü trimestere kadar gecikme nedenleri.

Yöntem: 2002 -2006 yılları arasında hastane konseyinde görüşülen olguların retrospektif çalışması. Olgular, (erken sonlandırma (<23.gebelik haftası) ve geç sonlandırma (≥23.gebelik haftası) olmak üzere iki grupta değerlendirildi. Gebelik sonlandırması uygulanan gebelerin tümü, etkilenmiş sistemin patolojisi ve koryonisiteye göre sınıflandırılmıştır. Üçüncü trimesterde sonlandırmaya neden olan gecikmeler dört grupta incelenmiştir.

Bulgular: Bu beş yıllık dönemde 1.449 komplike gebelik değerlendirildi ve 713 olguya sonlandırma seçeneği sunuldu. 677 olgunun (%94.95) 412' sine (%60.09) ve 265' ine (%39.91) sırasıyla, erken ve geç sonlandırma uygulanmıştır. En sık görülen endikasyonlar santral sinir sistemi anomalileri (%57.7), kromozom anomalileri (%11.7) ve ürogenital anomalilerdi (%8.4). Gebelik sonlandırmasında gecikmelere yol açan en sık neden, ultrasonografi taramasındaki yetersizlik (%65.6) olarak değerlendirilmiştir.

Sonuç: Etkilenmiş gebeliklerden korunmanın en önemli adımı, fetal anomaliler açısından sistematik taramadır. Gebelik sonlandırması açısından ailelere verilen bilgi önemli olup, sonlandırma kararında pek çok etken rol almaktadır. (J Turkish-German Gynecol Assoc 2010; 11: 1-7)

Anahtar kelimeler: Prenatal tanı, fetal anomali, gebelik sonlandırması

Geliş Tarihi: 29 Kasım 2009 **Kabul Tarihi:** 30 Ocak 2010

Introduction

Prenatal screening for congenital anomalies has increased (Eurocat study; 1-3), and consequently, the number of terminations of pregnancy (TOPs) has increased. The identification of serious untreatable abnormalities is sometimes a reason for a woman to request a TOP. The rate of infant deaths due to lethal congenital anomalies has remained stable and the percentage of infant deaths attributable to lethal congenital anomalies has increased over time (4). Wen et al. (5) reported that the infant mortality rate in Canada due to fatal congenital anomalies decreased from 3.11 per 1000 live births in 1981 to 1.89 per 1000 live births in 1995. This statistic suggests that patterns of lethal congenital anomalies may have changed in recent years, primarily because of advances in prenatal diagnosis. A 13.2% perinatal mortality rate due to congenital malformations is the third most common cause of infant mortality after stillbirths and prematurity, according to Erdem (6). It is likely that many of these fetuses would have died perinatally if the pregnancy had continued.

Turkish law (law no. 2827, paragraph 5; 27 May 1983)authorizes legal TOP for two distinct conditions: (a) voluntary TOP up to 10 weeks in unwanted pregnancies and (b) elective TOP for medical reasons (7). Elective TOP is possible at every stage of gestation with no stated upper gestation limit if there are

Address for Correspondence / Yazışma Adresi: *Uzm.Dr. Ali Gedikbaşı, Ataköy 11. Kısım, Yasemin Apt. D.16 34716 İstanbul, Turkey*
Mobile: +90 532 213 51 40 e.mail: alged_1971@yahoo.com

serious maternal (ongoing pregnancy is life-threatening) or fetal (a high risk of severe disabilities or an untreatable fatal disease) circumstances. The legal process requires the agreement of one obstetrician and one associated physician who declare a maternal or fetal cause justifying elective TOP.

The aim of the current study was to evaluate the indications of TOP in our institution as determined by the hospital's perinatology-neonatology council and counseled and/or agreed to by parents, and to discuss the reasons leading to third trimester TOPs.

Material and Methods

This was a retrospective study conducted between January 2002 and December 2006 at the Istanbul Bakirkoy Maternity and Children Diseases Hospital. Our hospital is a tertiary referral center in Istanbul, with 92,239 births during the study period. It is routine practice to propose ultrasound examinations for all gravidas, especially at 11-14, 20-22, and 28-32 weeks gestation. Four specialists in maternal and fetal medicine performed the ultrasonographic examinations (Voluson 730 Expert TM; GE Healthcare, Milwaukee; Wİ, USA) and invasive procedures. Pregnancies detected with congenital abnormalities and those that underwent TOP in our hospital constituted the study population.

Fetal anomalies were classified according to the International Classification of Disease 10 (1994) and Eurocat (2) with respect to pathology and chorionicity. Pathologic classification included central nervous system (CNS), facial abnormalities (eye, ear, cleft lip, and palate malformations), congenital heart disease (CHD), digestive system abnormalities, urogenital system abnormalities (UGS), limb abnormalities, musculoskeletal and connective tissue pathologies, and chromosomal abnormalities. In addition to the 2003 EUROCAT classification (3), we added thoracic pathologies, hydrops fetalis, placenta and associated pathologies, multiple pregnancies and related complications, and specific maternal and social conditions. After completion of the fetal anomaly work-up, a multidisciplinary medical panel, including members of the Perinatology Division and related subdivisions of the Pediatrics and Pediatric Surgery Departments, counseled the couple. Our hospital's Ethical Committee and the Perinatal-Neonatal Council offered patients an opportunity to discuss the prenatal findings, neonatal prognosis, and pregnancy management and options, including TOP. The decisions and attitudes of families towards TOP or continuing pregnancy based on fetal anomalies, divided into two groups with early and late diagnoses, were also evaluated. In our hospital, misoprostol induction is the main procedure for TOP beyond 14 weeks of gestation. From 26 weeks gestation onwards, fetocide is performed prenatally. Afterwards, the vaginal misoprostol dose for TOP is usually 200 μg every 6 h. In third trimester pregnancies with a scarred uterus, TOP is performed using 50 μg (one-fourth of a 200 μg tablet) vaginal misoprostol every 6 h. An oxytocin infusion is another method used in multigravidas with favorable cervices, or combined techniques of misoprostol plus oxytocin and / or Foley catheter dilatation were used to accelerate induction.

The reasons why some third trimester TOPs were not performed earlier were categorized retrospectively as follows: 1) third trimester prenatal diagnosis of conditions potentially identifiable earlier (false negative earlier screening); 2) fetal diagnosis and related conditions could not be evaluated and predicted accurately until the third trimester, although second trimester diagnosis is possible; 3) diagnosis and prognostic assessment performed during second trimester, although a poor fetal prognosis had been recognized, but the decision to terminate was made later in gestation; and 4) second trimester diagnosis not achievable due to a later onset of clinical conditions.

Statistical analysis

The GraphPad Prisma V.3 package program (SPSS Inc., Chicago, IL, USA) was used for the statistical analyses. Descriptive statistical methods (mean and standard deviation), chi-square (χ^2), Fisher's exact test, and odds ratios (ORs) were used for qualitative data determination. The results were evaluated with a confidence level (CI) of 95%, and a significance level of $p<0.05$.

Results

A total of 1449 cases were evaluated by the hospital council, 713 TOP decisions (49.2%), and 677 pregnancy TOPs (46.7%) were registered during the study period. Most of the gravidas (87.8%) were <35 years of age, with a mean age of 27.1±5.71 years and a mean gestational age of 21.82±5.31 weeks (minimum 10, weeks; and maximum, 37 weeks) at the time of diagnosis (Table1).

The total TOP rate was 7.30%, with an increasing frequency and highest level in 2006 (12.03‰). The late TOP rate was 2.87‰, and also had an increasing frequency and highest level in 2006 (5.52‰). Six hundred seventy-seven pregnancies (94.95% of 713 cases) opted for TOP at our hospital. The proportion of identified reasons for TOP and related percentages is listed in Table 2. Of 285 late TOP decisions, 265 cases (92.98%) were terminated.

The most common pathologies related to TOP were CNS (51.7%), chromosomal (11.7%), and UGS abnormalities (8.4%). The order in early and late terminations was similar with

Table 1. Demographic characteristics (n = 713)

	Mean±Std. Deviation	Minimum	Maximum
Age <35 (n=626, 87.8%) ≥35 (n=87, 12.2%)	27.1±5.71	14	45
Gravidity	2.38±1.68	1	15
Parity	0.99±1.26	0	10
Gestational week at diagnosis	21.82±5.31	10	38
Gestational week of termination	22.17±5.35	11	38

Table 2. Pregnancy termination rate and late pregnancy termination rate (n: 677 cases for total TOP; n: 265 cases in late TOP)

Year	Total births	Total Terminations (n)	‰	Late Terminations (n)	‰
2002	19.074	128	6.71	52	2.73
2003	20.743	130	6.27	38	1.83
2004	21.244	130	6.12	49	2.31
2005	16.130	108	6.70	43	2.67
2006	15.048	181	12.03	83	5.52
Total	92.239	677	7.30	265	2.87

different percentages for CNS abnormalities, chromosomal, and UGS abnormalities (51.5%, 12.4%, and 8.7% in early TOPs; and 52.1%, 10.6%, and 7.9% in late TOPs, respectively).

Three triplet pregnancies, and 12 dichorionic and 15 monochorionic twin pregnancies with abnormalities were diagnosed. All triplets were trichorionic pregnancies with CNS pathologies and feticide was performed for the affected because of anencephaly in the 22nd gestational week, spina bifida in the 27th gestational week, and anencephaly in the 21st gestational week. Eight dichorionic pregnancies had CNS abnormalities, two pregnancies had non-immune hydrops fetalis, and one pregnancy had a cardiac abnormality, and these affected fetuses were terminated. In one case diagnosed as a molar pregnancy, the entire pregnancy was terminated at 14 gestational weeks. Our database for monochorionic twins constituted four cases with co-twins diagnosed as acardiac twins, two cases with thoracopaghus, one case with twins both diagnosed with trisomy 21, four cases in which one of the twins had CNS abnormalities, two cases in which one of the twins were diagnosed with non-immune hydrops, one case with a cardiac abnormality in co-twin, and one case with non-immune hydrops because of twin-to-twin transfusion syndrome. We performed bipolar cord coagulation in 10 cases and alcohol injection into the umbilical arteries in 5 cases.

The process for delaying third trimester TOPs was analyzed in more detail (Table 3). In 174 terminations (65.6%) we determined that the prenatal diagnosis of fetal pathology could have been made earlier. The reasons for these cases were a failure in screening by ultrasound in the second trimester and throughout pregnancy. The main pathologies in this group were central nervous system abnormalities (n=121; neural tube defects, hydrocephaly, and holoprosencephaly), urogenital abnormalities (n=14; bilateral renal agenesis), and aneuploidies (n=17; trisomies 18 and 21) (Table 4).

In 15 cases (5.7%), the prognosis of the anomaly could not have been recognized definitely until the third trimester, although prenatal diagnosis of the anomaly was possible earlier. The majority of these cases consisted of cerebral ventriculomegaly (n=4), in which a poor prognosis could only be established when associated cerebral anomalies became visible or rapid enlargement of ventriculomegaly occurred.

The third group consisted of 23 cases (8.7%) with a poor prognosis of fetuses established in the second trimester screening, but TOP was postponed because the couple required a longer time to make a decision about the TOP.

In 53 cases (20.0%) the diagnosis of anomalies or pregnancy conditions were not possible earlier than the third trimester, with a regular ultrasound examination which was routinely performed. This group consisted of 16 cases with severe pre-eclampsia, HELLP syndrome, and intrauterine growth restriction. We also had 13 cases with skeletal dysplasia with late onset/recognition of short limbs and associated abnormalities. Another group had neurologic defects (n=6), including microcephaly and hydrocephaly and urogenital defects (n=6) with congenital hydronephrosis and non-functional kidneys associated with late onset of anhydramnios and renal failure.

From 26 weeks onwards, fetocide was performed in 183 cases, with only 1 failed case. The diagnosis in this case was non-immune hydrops fetalis and fetocide was performed twice without success because of the fetal position and a posteriorly-located placenta. After consulting the parents, the decision to proceed with delivery was made and fetal death occurred during labor.

In 588 women (86.9%), labor induction was achieved by vaginal misoprostol. In multigravidas with favorable cervices, oxytocin induction was another method for labor induction (3.4%). In cases with failed inductions, additional oxytocin induction and/or Foley catheter application with vaginal misoprostol were performed (9.0%). There was statistical significance in the additional need of oxytocin and / or a Foley catheter in the late termination group (p=0.017). We had 5 cases with 2 uterine ruptures in each group, both with an obstetric history of a previous cesarean section. Another three cases were terminated due to hysterotomies, 1 week after induction with the aforementioned methods (Table 5).

Discussion

The goal of maternal-fetal medicine is to support the treatment of neonates affected by disorders diagnosed during pregnancy. However, the prognosis of several pathologies is so poor that TOP may be considered in countries where it legally exists. We are aware that TOP raises many ethical problems, particularly in the third trimester (8-10). Fears have been expressed that improving prenatal diagnosis leads to a lower tolerance of disability, with a subsequent increase in the prevalence of elective TOP (11). Most terminations are carried out on gravidas at low risk for fetal abnormalities (12).

Table 3. Distribution of fetal abnormalities, cases with early and late termination

	Total Anomaly (n) (%)	Early termination (<23GW) (n) (%)	Late Termination (≥23GW) (n) (%)
1. Central Nervous System (CNS) Neural tube defects (Anencephaly and similar, encephalocele, 2pina Bifida), hydrocephaly, microcephaly, holoprosencephaly, other	350 (total) 51.7	212 51.5	138 52.1
2.Face and Neck Cystic hygroma, face abnormalities (eye abnormalities, ear abnormalities, cleft lip with or without palate)	16 (total) 2.4	15 3.6	1 0.4
3.Congenital Heart Disease (CHD) Anomalies of cardiac chambers and connections (common arterial truncus, transposition of great arteries, single ventricle), malformation of cardiac septa (VSD, ASD, AVSD, tetralogy of Fallot and double outlet right ventricle), malformations of valves (tricuspid atresia and stenosis, Ebstein' s anomaly, aortic valve atresia/ stenosis, hypoplastic left heart), malformation of great arteries and veins (coarctation of aorta, pulmonary artery anomaly), complex cardiac anomaly, cardiomyopathy	27 (total) 4.0	12 2.9	15 5.7
4.Digestive-Gastrointestinal system Esophageal atresia and stenosis with or without fistula, small intestine anomaly (duodenal anomalies, other specified parts of small intestines), ano-rectal atresia and stenosis	No cases	No cases	No cases
5.Urogenital system anomalies (UGS) Renal anomalies (bilateral renal agenesis, bilateral polycystic kidney disease, congenital hydronephrosis, bladder extrophy), genital anomalies (hypospadias, indeterminate sex), adrenal anomalies (congenital adrenal hyperplasia)	57 (total) 8.4	36 8.7	21 7.9
6.Limb anomalies Upper limb anomalies (complete absence of upper limb, absence of upper arm and forearm with hand present, absence of both forearm and hand, absence of hand and fingers), lower limb anomalies (complete absence of lower limb, absence of thigh and lower leg with foot present, absence of both lower leg and foot, absence of foot and toe, abnormalities and deformities of foot)	6 (total) 0.9	2 0.5	4 1.5
7.Musculoskeletal – connective tissue and metabolic defects Skeletal dysplasia / Dwarfism, Pierre Robin Syndrome, omphaloceles, gastroschisis,fetal metabolic defect, fetal tumor, other	50 (total) 7.4	32 7.8	18 6.8
8.Chromosomal anomalies Down syndrome, Patau syndrome, Edward syndrome, other trisomies and partial trisomies of autosomes, monosomies and deletions from autosomes, Turner syndrome, Klinefelter's syndrome, other	79 (total) 11.7	51 12.4	28 10.6
9.Thoracic anomalies Diaphragmatic hernia, congenital cystic adenoid malformation, pulmonary sequestration, bronchogenic cyst, congenital airway obstruction, pleural effusion, thoracic hypoplasia	6 (total) 0.9	3 0.7	3 1.1
10.Hydrops Immune hydrops, non-immune hydrops (anemia-thalassemia, other reasons)	26 (total) 3.8	19 4.6	7 2.6

11.Placenta and chord anomalies Amniotic band, placental insufficiency and intrauterine growth retardation, premature rupture of membrane (PROM)	8 (total) 1.2	3 0.7	5 1.9
12.Multiple pregnancy and associated complications Twin to twin transfusion syndrome (TTTS), major fetal anomaly in co-twin, other	30 (total) 4.4	21 5.1	9 3.4
13.Maternal, infection and social complications Medical complication associated with pregnancy (pregnancy induced hypertension, preeclampsia, superimposed preeclampsia, gestational diabetes mellitus), maternal – fetal infection (rubella, toxoplasmosis, cytomegalovirus), teratogenic exposure, rape	22 (total) 3.2	6 1.5	16 6.0
Total of cases	677 100.0	412 100.0	265 100.0

The main reason for TOP is CNS abnormalities, which is in agreement with other single institute publications and public studies (12-18). Evaluation of the fetal CNS anomalies revealed that the CNS was responsible for more than one-half of the cases. Neural tube defects, especially anencephaly, constituted a substantial cause in the early termination group, while the diagnosis and rate of hydrocephalus increased in the late group. This finding is explained by the fact that anencephaly can be easily diagnosed in the first trimester in a competent sonographic screening program, while hydrocephaly usually develops late in the second trimester or early in the third trimester (12). There will always be cases, such as microcephaly and progressive ventriculomegaly, in which severe fetal conditions are difficult to diagnose before 23 weeks of gestation, but in our cohort, a large number of TOPs was due to lack or failure of ultrasound screening in the second trimester.

Our perinatology database consisted of 155 cases with CHDs and 27 cases with TOPs. Our hospital's neonatology database consisted of 350 cases with cardiac abnormalities diagnosed in the postnatal period during 2002-2006. Ventricular and atrial septal defects (n=185) constituted the main two groups in postnatal cardiac abnormalities (52.9 %). Cardiac abnormalities have a changing intrauterine nature. Therefore, prenatal diagnosis is not always accurate. Even the postnatal nature of these pathologies is different; specifically, muscular ventricular septal defects have the potential for spontaneous closure. However, the severity of cardiac pathologies is varying and life-threatening abnormalities are rare. We have found a similar mean rate (4.0%) of cardiovascular malformations to other investigators. This finding increased (5.7%) in the late TOP group with a definite diagnosis. The rate of cardiovascular malformations is 4%-8% in earlier reports (12, 17) and up to 16%-26% in recent reports (13, 16).

We found chromosomal abnormalities to be the second most common indication for TOPs, among early and late TOPs. The most common chromosomal abnormality was trisomy 21, constituting 57.0% of chromosomal abnormalities as found by us and other investigators (12, 13, 16). First and second trimester screening programs are related with early terminations, but late terminations are correlated with second trimester ultrasound screening. This study confirmed that ultrasonography is an important tool for the prenatal detection of chromosomal abnormalities. The association between chromosomal abnormalities and structural defects is well-known and the association with minor ultrasound anomalies has been well-studied (18, 19). The global ultrasound detection rate for chromosomal abnormalities in unselected populations varies from 21.5%-55.6% (20-23).

Clinicians usually deal with two major problems in twins discordant for a major fetal anomaly (development of polyhydroamnios associated with the risk of preterm delivery and intrauterine death of one fetus that poses a risk of death in monochorionic placentation to the co-twin) (24-26). We found that severe polyhydroamnios developed at 26-30 weeks of gestation; delivery was 2 weeks earlier (27). Active management is another way in these complicated multiple pregnancies and feticides in dichorionic pregnancies and alcohol ablation or cord occlusion in monochorionic pregnancies are proposed management techniques (28-30).

UGS pathologies constituted the third common group of TOPs (9.1%). The overall sensitivity rate for renal malformations is approximately 55% in different countries (21, 22). Bilateral involvement, associated malformations, and anhydramnios are unfavorable determinants of the prognosis in individual cases (31-33).

Late TOPs (39.1% of 677 cases) has a high percentage with a large number of TOPs (65.6%) in the third trimester due to failure of ultrasound screening in the second trimester. Improving the effectiveness of ultrasound screening in the second trimester performed by maternal-fetal medicine specialists and / or sonographers may reduce the number of terminations in late pregnancy. The late onset of clinical pathology (20.0%), and poor prognosis and delayed diagnosis (5.7%) are two other acceptable conditions of third trimester TOPs.

Conflict of interest

None declared

Table 4. Diagnostic procedure leading to late termination (n=265)

A - Third trimester prenatal diagnosis of conditions potentially identifiable earlier	**n=174 (65.6%)**
1- Central nervous system abnormalities	121
2- Face and neck	1
3- Congenital heart disease	7
4- Urogenital system anomalies	14
5- Limb anomalies	4
6- Musculoskeletal – connective tissue and metabolic defects	4
7- Chromosomal anomalies	17
8- Thoracic anomalies	-
9- Hydrops	-
10- Placenta and chord anomalies	1
11- Multiple pregnancy and associate anomalies	4
12- Maternal, infection and social complications	1
B - Fetal diagnosis could not be evaluated until third trimester, although second trimester diagnosis achievable	**n=15** (5.7%)
1- Central nervous system abnormalities	4
2- Face and neck	-
3- Congenital heart disease	1
4- Urogenital system anomalies	4
5- Limb anomalies	-
6- Musculoskeletal – connective tissue and metabolic defects	-
7- Chromosomal anomalies	4
8- Thoracic anomalies	1
9- Hydrops	-
10- Placenta and chord anomalies	-
11- Multiple pregnancy and associate anomalies	1
12- Maternal, infection and social complications	-
C - Diagnosis and prognostic assessment made during second trimester, but choice to TOP taken later in gestation	**n = 23** (8.7%)
1- Central nervous system abnormalities	8
2- Face and neck	-
3- Congenital heart disease	2
4- Urogenital system anomalies	1
5- Limb anomalies	-
6- Musculoskeletal – connective tissue and metabolic defects	4
7- Chromosomal anomalies	1
8- Thoracic anomalies	1
9- Hydrops	2
10- Placenta and chord anomalies	1
11- Multiple pregnancy and associate anomalies	3
12- Maternal, infection and social complications	-
D - Second trimester diagnosis probably not achievable due to late onset of the condition	**n = 53 (20.0%)**
1- Central nervous system abnormalities	6
2- Face and neck	-
3- Congenital heart disease	-
4- Urogenital system anomalies	6
5- Limb anomalies	-
6- Musculoskeletal – connective tissue and metabolic defects	13
7- Chromosomal anomalies	3
8- Thoracic anomalies	-
9- Hydrops	4
10- Placenta and chord anomalies	3
11- Multiple pregnancy and associate anomalies	2
12- Maternal, infection and social complications	16

Table 5. Method of TOP in early and late terminations

	Early termination (<23 GW) (n) (%)	Late Termination (≥23 GW) (n) (%)	n (%)	P
Misoprostol	371 (%90.0)	217 (%81.9)	588 (%86.9)	0,003
Hysterotomy / Hysterectomy*	2 * (%0.5)	3 * (%1.1)	5 (%0.7)	0,617
Oxytocin	11 (%2.7)	12 (%4.5)	23 (%3.4)	0,277
Misoprostol + Oxytocin or Foley catheter	28 (%6.8)	33 (%12.5)	61 (%9.0)	0,017
Total	412 (%100.0)	265 (%100.0)	677 (%100.0)	

($p<0.05$)

*in each group with one case due to uterine rupture

References

1. EUROCAT, European Surveillance of Congenital Anomalies. Annual report 2003.
2. EUROCAT-ICBDMS international symposium on registration and prevention of congenital anomalies. Reproductive Toxicology 1999; 13: 321-40.
3. Richardus JH, Graafmans WC, Verloove-Vanhorick SP, Mackenbach JP. Differences in perinatal mortality and suboptimal care between 10 European regions: result of an international audit. BJOG 2003; 110: 97-105.
4. van der Pal-de Bruin KM, Graafmans W, Biermans MCJ, Richardus JH, Zijlstra AG, Reefhuis J et al. The influence of prenatal screening and termination of pregnancy on prenatal mortality rates. Prenat Diagn 2002; 22: 966-72.
5. Wen SW, Liu S, Joseph KS, Trouten K, Allen A. Regional patterns of infant mortality caused by lethal congenital anomalies. Can J Public Health 1999, 90: 316-9.
6. Erdem G. Perinatal mortality in Turkey. Paediatr Perinat Epidemiol 2003; 17: 17-21.
7. Nufus Planlamasi Hakkinda Kanun. Resmi Gazete, 27/5/1983; Sayi: 18059, 2827. Kanun Maddesi.
8. Lorenzen J, Holzgreve W. Helping parents to grieve after second trimester termination of pregnancy for fetopathic reasons. Fetal Diagn Ther 1995; 10: 147-56.
9. Chervenak FA, McCullough LB. What is obstetric ethics? Clinical Obstet Gynecol 1992; 35: 709-19.
10. Paintin D. Abortion after 24 weeks. BJOG, 1997; 104: 398-400.
11. Stacey M. The new genetics: a feminist view. In, The Troubled Helix: Social and Psychological Implications of the New Human Genetics, Marteau TM, Richards M (eds). Cambridge University Press: Cambridge, 1996; 331-49.
12. Dommergues M, Benachi A, Benifla JL, des Noettes R, Dumez Y. The reasons for termination of pregnancy in the third trimester. BJOG 1999; 106: 297-303.
13. Vaknin Z, Ben-Ami I, Reish O, Herman A, Maymon R. Fetal abnormalities leading to termination of singleton pregnancy: the 7-year experience of a single medical center. Prenat Diagn 2006; 26: 938-43.
14. Akgun H, Basbug M, Ozgun MT, Canoz O, Tokat F, Murat N et al. Correlation between prenatal ultrasound and fetal autopsy findings in fetal anomalies terminated in the second trimester. Prenat Diagn 2007; 27: 457-62.
15. Ramalho C, Matias A, Brandao O, Montenegro N. Critical evaluation of elective termination of pregnancy in a tertiary medicine center during 43 months: correlation of prenatal diagnosis findings and postmortem examination. Prenat Diagn 2006; 26: 1084-8.
16. Guillem P, Fabre B, Cans C, Robert-Gnansia E, Jouk PS. Trends in elective terminations of pregnancy between 1989 and 200 in a French county (the Isere). Prenat Diagn 2003; 23: 877-83.
17. Bosma JM, van der Wal G, Hosman-Benjaminse SL. 1997. Late termination of pregnancy in North Holland. BJOG 1997; 104: 478-87.
18. Boyd PA, Tondi F, Hicks NR, Chamberlain PF. 2004. Autopsy after termination of pregnancy for fetal anomaly: retrospective cohort study. BMJ 2004; 328: 137-40.
19. Nicolaides KH, Snijders RJM, Gosden CM, Berry C, Campbell S. Ultrasonographically detectable markers of fetal chromosomal abnormalities, Lancet 1992; 340: 704-7.
20. Cans C, Amblard F, Devillard F, Pison H, Jalbert P, Jouk PS. Population screening for aneuploidy using maternal age and ultrasound. Prenat Diagn 1998; 18: 683-92.
21. Grandjean H, Larroque D, Levi S, the Eurofetus study group. The performance of routine ultrasonographic screening of pregnancies in the Eurofetus study. Am J Obstet Gynecol 1999; 21: 446-54.
22. Chitty L.S., Ultrasound screening for fetal abnormalities. Prenat. Diagn 1995; 15: 1241-57.
23. Lee K, Kim Y, Choi SM, Kim JS, Lee BS, Seo K et al. Effectiveness of prenatal ultrasonography in detecting fetal anomalies and perinatal outcome of anomalous fetuses. Younsei Med J 1998; 39: 372-82.
24. Sebire NJ, Sepulveda W, Hughes KS, Noble P,Nicolaides KH: Management of twin pregnancies discordant for anencephaly. BJOG 1997; 104: 216-9.
25. Evans MI, Goldberg JD, Dommergues M, Wapner RJ, Lynch L, Dock BS et al. Effcacy of second trimester selective termination for fetal abnormalities: International collaborative experience among the world's largest centers. Am J Obstet Gynecol 1994; 171: 90-4.
26. Lipitz S, Meizner I, Yagel S, Shapiro I, Achiron R, Schiff E. Expectant management of twin pregnancies discordant for anencephaly. Obstet Gynecol 1995; 86: 969-72.
27. Gul A., Cebeci A, Aslan H, Polat I, Sozen I, Ceylan Y. Perinatal Outcomes of Twin Pregnancies Discordant for Major Fetal Anomalies. Fetal Diagn Ther 2005; 20: 244-8.
28. Rustico MA, Baietti MG, Coviello D, Orlandi E, Nicolini U. Managing twins discordant for fetal anomaly. Prenat Diagn 2005; 25: 766-71.
29. Wong AE, Sepulveda W. Acardiac anomaly: current issues in prenatal assessment and treatment. Prenat Diagn 2005; 25: 796-806.
30. Nakata M, Chmait RH, Quintero RA. Umbilical cord occlusion of the donor versus recipient fetus in twin-twin transfusion syndrome. Ultrasound Obstet Gynecol 2004; 23: 446-50.
31. Wiesel A, Queisser-Luft A, Clementi M, Bianca S, Stoll C; EUROSCAN Study Group. Prenatal detection of congenital renal malformations by fetal ultrasonographic examination: an analysis of 709,030 births in 12 European countries. Eur J Med Genet 2005; 48: 131-44.
32. Zeijl C, Roefs B, Boer K, Aronson D, van Amstel SP, Wolf H et al. Clinical outcome and follow-up of sonographically suspected in utero urinary tract anomalies. J Clin Ultrasound 1999; 27: 21-8.
33. Bulla M, Kuwertz-Bröking E, Fründ S, Schulze Everding A, Louwen F, Baez E et al. Fetal nephro- / uropathy: a retrospective analysis of 124 cases seen in the period from 1996 to 2002. Z Geburtshilfe Neonatol. 2005; 209: 100-7.