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Selective fetal termination in monochorionic twin pregnancies – pregnancy outcome after bipolar cord coagulation and interstitial laser coagulation

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SUMMARY

Introduction/Objective In this paper we present the perinatal outcome after selective fetal termination (SFT) in monochorionic (MH) twins done by bipolar cord coagulation (BCC) and interstitial laser coagulation (ILC).

Methods During a five-year period, SFT was done in 22 MH twins. BCC was done in 15 and ILC in seven cases. We registered the indication for SFT, gestational age at SFT, immediate postoperative death and late death of the co-twin, PPROM (preterm pre-labor rupture of membranes), gestational age at delivery/abortion, procedure-to-delivery interval, mode of delivery, neonatal body weight and 5-minute Apgar score.

Results Live birth was significantly higher after BCC than after ILC (86.7:57.1%). Gestational age at intervention was higher in BCC (20.2 ± 1.8 : 16.5 ± 1.7 weeks). Gestational age at delivery/abortion was lower for ILC (32.5 ± 4.8 : 27.5 ± 9.5 weeks); however, there was no difference when comparing live births only (33.8 ± 3.7 : 34.7 ± 4.5 weeks). There was no difference between procedure-to-delivery/abortion interval (86.7 ± 33.7 : 77.1 ± 73 days); however, the interval was significantly higher after ILC when comparing live births only (93.3 ± 33 : 133 ± 30.9 days). There was no difference in PPROM (26.7:14.3%); preterm delivery (69.2:50%); Cesarean section rate (84.6:75%); neonatal body weight (2174 ± 82.4 : 2475 ± 823 g); or Apgar score (7.7 ± 1.9 : 9.2 ± 1).

Conclusion There is no ideal method of SFT in MH twins. Success of each SFT method depends upon the correctly set indication, gestational age at the procedure, and the SFT technique. The risk of co-twin death is lower after BCC than after ILC. As in Narodni Front University Clinic for Gynecology and Obstetrics better results were achieved after BCC, this method became a standard for SFT in MH twins, except in cases of twin reversed arterial perfusion sequence before 16 weeks.

Keywords: selective fetal termination; monochorionic twins; bipolar cord coagulation; interstitial laser coagulation

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INTRODUCTION

Monochorionic (MC) twin pregnancies present challenge to the obstetricians due to the placental anastomoses between the twins. About one half of those pregnancies are uneventful, but the other half may be complicated by twin-to-twin transfusion syndrome (TTTS), selective fetal growth restriction (sFGR), twin reversed arterial perfusion (TRAP) sequence or discordance for fetal abnormality (DFA). In the most severe forms of those complications, when one fetus is severely anomalous, or is suffering severe distress, particularly if the condition is compromising the non-affected fetus, selective fetal termination (SFT) may be the best option, as in the case of single intrauterine death of one fetus, profound consequences for the surviving twin are reported, including a 15–25% risk of death or neurological damage [1–4].

SFT in MC pregnancies is difficult because conventional feticide techniques with intracardiac injection of potassium chloride are not an option, as the substance could embolize to the non-affected twin through the placental vascular anastomoses [1, 2, 5]. Complete separation of the twin's blood flow is the only option for successful SFT. In cases of incomplete separation, the other twin may die as the consequence of acute agonal interfetal hemorrhage through placental anastomoses [2, 5]. Therefore, complete and permanent occlusion of the affected twin's umbilical cord flow is recommended to protect the surviving twin. Umbilical cord occlusion may be done by several methods, such as fetoscopic cord ligation, interstitial laser coagulation, monopolar coagulation, radiofrequency ablation or ultrasound-guided bipolar cord coagulation [5–9].

The objective of this study is to presents pregnancy outcome after SFT in MC pregnancies done by ultrasound-guided bipolar cord coagulation and interstitial laser coagulation in a single tertiary center.

METHODS

A retrospective observational study included all MC pregnancies in which SFT was performed

by bipolar cord coagulation (BCC) or interstitial laser coagulation (ILC) at the Narodni front University Clinic for Gynecology and Obstetrics during a five-year period. Indications for SFT were severe forms of TTTS, Quintero stage III and IV [10]; sFGR with worsening fetal Doppler velocity suggesting high risk of intrauterine death in the non-viable fetus [11]; TRAP sequence in cases when abdominal circumference ratio between the acardiac fetus and the donor is over 50% or with the signs of congestive heart failure in the donor; or DFA. In each case, after extended counseling about the risk of selective feticide *vs*. expectant management, the patients opted for the SFT. After the Ethics Committee had approved SFT, written consent for the procedure was obtained.

BCC was done in the operating room under general anesthesia, complete aseptic procedures, and prophylactic measures – intravenous antibiotics (ceftriaxone) and acute tocolysis for 48 hours. After skin disinfection, under the ultrasound guidance, a 3.3-mm trocar was introduced into the targeted fetus amniotic cavity avoiding transplacental approach, if possible 5–10 cm from the chosen coagulation site. Then 3 mm bipolar forceps were passed down the trocar, directed towards the cord of the terminating twin, which was grasped with the forceps. Coagulation started at the power of 26 W for 15 seconds. The effect of the coagulation was monitored by the appearance of turbulence and steam bubbles caused by the local heating of tissue between the blades of the forceps. If necessary, bipolar energy was increased by 5 W for 15 seconds, to a maximum 45 W. The procedure was considered successful when echogenic bubbles were seen coming from the cord and the cord itself appeared hyperechogenic. The procedure was repeated in two other sites for safety. Confirmation of occlusion was also provided by the absence of detectable color Doppler flow in the distal part of the cord, with at least 2 minutes of persistent asystole. If necessary, interventions that enable easer BCC performance (amnioinfusion, amnioderivation, septostomy) had been done previously.

ILC was done under ultrasound guidance by introducing an 18-gauge needle next to abdominal cord insertion of the targeted twin near the confluence of vitelline arteries and intrahepatic veins. Then, a laser fiber 400 m was introduced through the needle 4 mm outside the top of the needle, and coagulation started with the power of 20 W for 10–15 seconds. If necessary, coagulation was repeated with power higher by 5–10 W up until the maximum of 50 W. The procedure was considered successful if the hyperechogenic area was visualized peripherally and cessation of circulation was visualized by Doppler. Prophylactic measures included intravenous antibiotics (ceftriaxone) and acute tocolysis for 48 hours.

Cardiac activity of the co-twin was monitored during the entire procedure and immediately afterwards, and peak systolic velocity in the middle cerebral artery was measured after 2 hours and after 24 hours to detect acute fetal anemia. Fetal heart rate monitoring or tocogram was done after 1 hour, 24 hours, and 48 hours. Patients were discharged after at least 48 hours. CNS ultrasound was done after 7–14 days, and CNS MRI after 3–8 weeks.

Monitoring continued in two-week intervals by measuring biometry, blood pressure, and Doppler. Delivery was conducted near term. Mode of delivery was according to obstetrical indications. After birth, chorionicity was confirmed by the pathologist.

We registered maternal age and parity, indication for SFT, gestational age at SFT, operating time for BCC (defined as skin-to-skin time), early complications (postoperative uterine activity, amniotic fluid leakage), immediate postoperative death within 24 hours of the co-twin, late death of the co-twin, preterm pre-labor rupture of membranes (PPROM), gestational age at delivery, procedure-to-delivery interval, mode of delivery, neonatal body weight, and 5-minute Apgar score.

Statistical analysis included calculating means and standard deviations, frequencies, Student's t-test and χ^2 test (IBM SPSS Statistics, Version 24.0; IBM Corp., Armonk, NY, USA); $p < 0.05$ was considered statistically significant.

RESULTS

In a five-year period, 22 SFT were done in MC pregnancies – 15 (68.18%) by BCC and seven (31.82%) by ILC.

Indications for BCC were sFGR in seven (46.67%), TTTS (stage III/IV) in four (26.67%) (Stage III in three and Stage IV in one), DFA in three (30%), and TRAP sequence in one case (4.56%). In the cases of DFA, the first anomalous fetus had multiple anomalies – agenesis of the distal part of the leg, polyhydramnios and bowel obstruction; the second had CNS anomaly (Dandy–Walker anomaly), while the third one had discordant chromosomal anomaly (45,X0) with cystic hygroma. Two cases were dichorionic triplets with sFGR and DFA. The average gestational age at intervention was 20.2 ± 1.8 weeks. In nine cases (60%) we performed an intervention that enables easer BCC performance (amnioinfusion in five; amnioderivation in three, while one case had unsuccessful attempt of fetoscopic laser coagulation). Karyotype was done in eight cases (53.33%) – in three for maternal age, in three for DFA, in one for sFGR, and in one case of TRAP sequence. BCC was successful in all the cases. Trocar was directly introduced into the amniotic cavity of the "target" twin in 14 cases (93.3%). Accidental septostomy occurred in one case after introduction of a trocar through co-twin amniotic sac making monoamniotic (MA) pregnancy. There was no early fetal death, and there were two cases (13.33%) of late fetal death – one case of TTTS after 36 days as a consequence of cord entanglement due to iatrogenic MA pregnancy, and one case of DFA done at 16 + 4 weeks after 46 days for no obvious cause (Table 1.) Live birth after BCC was 86.7% (13/15). Preterm delivery occurred in 69.2%, and PPROM in 26.7%. The average gestational age at delivery was 33.8 ± 7 weeks. Cesarean section was performed in 84.6% (Table 2).

ILC was done for TRAP sequence in four (57.13%), and for DFA, sFGR, and TTTS in one case each (14.29%). The average gestational age at ILC was 16.5 ± 1.7 weeks. Karyotype was done in five cases (71.43%) – four CVS

Table 1. Bipolar cord coagulation – description of the cases related to the procedure

No.	Indications	GA at SFT (week)	Previous interventions	Duration (min.)	Early fetal death (< 24h)	Late fetal death
1	sFGR	21 + 5	AC – 17 + 1 gw	22	No	No
2	sFGR	23 + 5	AI	14	No	No
3	sFGR	21 + 6	/	16	No	No
4	sFGR	18 + 6	AI	23	No	No
5	sFGR	20 + 3	AC – 17 + 2 gw / AI	13	No	No
6	sFGR	19 + 5	AI	17	No	No
7	sFGR (DH triplets)	21 + 3	/	21	No	No
8	TTTS – R (St IV)	22 + 4	FLK – 19 + 5 / AD – 21 + 6 gw	19	No	No
9	TTTS - D (St III)	20 + 0	/	18	No	After 36 days – MA
10	TTTS – D (St III)	19 + 3	AC – 16 + 5 gw / AD – 18+3 gw / AI	15	No	No
11	TTTS – D (St III)	19 + 4	AC/AD – 18 + 5gw	16	No	No
12	TRAP	19 + 6	AC – 16gw	15	No	No
13	DFA	16 + 4	AC – 15 + 5gw	11	No	After 46 days
14	DFA	21 + 1	CC during BKP	19	No	No
15	DFA (DH triplets)	18 + 3	AC (in both MC)	15	No	No
		20.2 ± 1.8	AI-5, AD-3, FLC-1, AC/CC-8/1	16.9 ± 3.4		2/15 (13.3%)

sFGR – selective fetal growth restriction; TTTS – twin to twin transfusion syndrome; D – donor; R - recipient; TRAP – twin reversed arterial perfusion;
DFA – discordant fetal anomaly; DH – dichorionic; GA – gestational age; gw – gestational week; SFT – selective fetal termination; AI – amnioinfusion;
AD – amnio-derivation; FLC – fetoscopic laser coagulation; AC – amniocentesis; CC – cordocentesis

Table 2. Bipolar cord coagulation – description of the cases related to the pregnancy outcome

Indications	GA (week) Del/Ab	Beginning of delivery	Interval BCC – delivery (days)	Delivery mode	Body weight (g)	5' Apgar
1. sFGR	37 + 1	Spontaneous	108	Vaginal	3,200	10
2. sFGR	28 + 3	Spontaneous + breech	33	CS	1,200	4
3. sFGR	39 + 1	Spontaneous	121	CS	3,100	9
4. sFGR	32 + 5	PPROM	90	CS	1,650	7
5. sFGR	29 + 5	Spontaneous	74	CS	1,350	6
6. sFGR	33 + 2	Fetal distress	95	CS	2,350	8
7. sFGR (DH triplets)	29 + 3	PPROM	54	Vaginal	1,220 1,300	7 6
8. TTTS R	32 + 1	Spontaneous	68	CS	1,800	6
9. TTTS D	(25 + 1)	Co-twin death	36	Ab induction	(600)	/
10. TTTS D	36 + 1	Spontaneous – repeat CS	124	CS	2,400	9
11. TTTS D	32 + 2	PPROM – placental abruption	88	CS	2,200	8
12. TRAP	38 + 2	Repeat SC	129	CS	3,700	10
13. DFA	(23 + 1)	Co-twin death	46	Ab induction	(400)	/
14. DFA	38 + 5	St post IVF	133	CS	2,700	10
15. DFA (DH triplets)	31 + 6	Fetal distress (PPROM of SFT at 20 + 5)	101	CS	1,400 1,450	6 6
Total (n = 15)	32.5 ± 4.8	PPROM 26.7%	86.7 ± 33.7		1,951 ± 965	
Live births (n = 13)	33.8 ± 3.7	PPROM 30.8%	89.6 ± 33	SC – 11 (84.6%)	2,174 ± 824	7.7 ± 1.9

sFGR – selective fetal growth restriction; TTTS – twin to twin transfusion syndrome; D – donor; R – recipient; TRAP – twin reversed arterial perfusion;
DFA – discordant fetal anomaly; DH – dichorionic; GA – gestational age; BCC – bipolar cord coagulation; Del – delivery; Ab – abortion; CS – cesarean section;
PPROM – preterm pre-labor rupture of membranes

and one amniocentesis. ILC was successful in all cases. In one case uterine activity was registered. There were three early fetal deaths (42.86%) and no late fetal death (Table 3) Live birth after ILC was 57.1% (4/7). Preterm delivery occurred in 50%; PPROM in 14.3%. The average gestational age at delivery was 34.7 ± 4.5 weeks. Cesarean section was performed in 75% (Table 4).

Live birth was significantly higher after BCC than after ILC (86.7:57.1%). Gestational age at intervention was higher in BCC. Gestational age at delivery/abortion was lower for ILC; however, there were no differences when comparing live births only. There were no differences between procedure-to-delivery/abortion interval; however, the interval was significantly higher after ILC when comparing live births only. There was no difference in PPROM, preterm delivery, Cesarean section rate, neonatal body weight, or Apgar score (Table 5).

DISCUSSION

SFT is a treatment option in well-selected cases of complicated MC twin pregnancy [1, 2]. Imperative in those cases is immediate, permanent, and complete obliteration of the umbilical cord. Different techniques are used, each of them with its own challenges, as well as operative

Table 3. Interstitial laser coagulation – description of the cases related to the procedure

No.	Indications	GA at SFT (week)	Previous intervention	Uterine activity	PPROM	Early co-twin death	Late co-twin death
1	TRAP	14 + 2	CVS	No	No	/	/
2	TRAP	15 + 3	CVS	No	No	/	/
3	TRAP	14 + 6	CVS	No	No	/	/
4	TRAP	16 + 4	CVS	Yes	No	Yes	/
5	DFA	17 + 5	AC	No	No	Yes	/
6	TTTS (Gr IV)	18 + 3	/	No	No	Yes	/
7	sFGR	18 + 1	/	No	No	/	/
Total	TRAP – 4 DFA – 1 sIUGR – 1 TTTS – 1	16.5 ± 1.7	CVS – 4 AC – 1				

TRAP – twin reversed arterial perfusion; DFA – discordant fetal anomaly; TTTS – twin to twin transfusion syndrome; sFGR – selective fetal growth restriction; GA – gestational age; PPROM – preterm pre-labor rupture of membranes

Table 4. Interstitial laser coagulation – description of the cases related to the pregnancy outcome

Indications	GA (week) Delivery/Ab	Beginning of delivery	Interval ILC-Delivery (days)	Delivery mode	Body Weight (g)	5' Apgar
1. TRAP	39+2	Spontaneous	175	Vaginal	3300	10
2. TRAP	32+1	Spontaneous	117	CS	2200	9
3. TRAP	29+5	PPROM	104	CS	1450	8
4. TRAP	(17+0)	Co-twin death	(3)	Ab induction	(180)	/
5. DFA	(18+1)	Co-twin death	(3)	Ab induction	(250)	/
6. TTTS	(18+5)	Co-twin death	(2)	Ab induction	(220)	/
7. sIUGR	37+4	Spontaneous	136	CS	2950	10
Total	27.5 ± 9.5	PPROM 14.3%	77.1 ± 73.0		1,507 ± 1,340	
Live births	34.7 ± 4.5	PPROM 25%	133.0 ± 30.9	CS – 75%	2475 ± 823	9.2 ± 1

TRAP – twin reversed arterial perfusion; DFA – discordant fetal anomaly, TTTS – twin to twin transfusion syndrome; sFGR – selective fetal growth restriction; GA – gestational age; ILC – interstitial laser coagulation; PPROM – preterm pre-labor rupture of membranes; CS – Cesarean section; Ab – abortion

Table 5. Pregnancy outcome after bipolar cord coagulation and interstitial laser coagulation

Outcome	BCC (n = 15)	ILC (n = 7)
Live birth n (%)	13/15 (86.7)	4/7 (57.1)*
GA at intervention (week)	20.2 ± 1.8	16.5 ± 1.7*
GA at delivery/abortion GA at delivery	32.5 ± 4.8 (33.8 ± 3.7)	27.5 ± 9.5* (34.7 ± 4.5)
Interval: intervention-delivery/abortion (days) Intervention-delivery (days)	86.7 ± 33.7(36–133) 89.6 ± 33	77.1 ± 73.0 (2–175) 133.0 ± 30.9*
PPROM / total n (%) Delivery	4/15 (26.7) 4/13(30.8)	1/7 (14.3) 1/4 (25)
Preterm delivery n (%)	9/13 (69.2)	2/4 (50)
Cesarean section n (%)	11/13 (84.6)	3 /4 (75)
Body weight (g) – total Live birth	1,951 ± 965 2,174 ± 824	1,507 ± 1,340 2,475 ± 823
5' Apgar score	7.7 ± 1.9	9.2 ± 1.0

*p < 0.05
BCC – bipolar cord coagulation; ILC – interstitial laser coagulation; GA – gestational age; PPROM – preterm pre-labor rupture of membranes

and preoperative risks [1, 5–9]. In selected cases we used equipment available at our institution – BCC in 68.18% and ILC in 31.82%.

The indications for SFT are well defined. In most studies, TTTS presents the major indication for the procedure (25–72%) and is performed in stages III–IV when previous therapeutic procedures were ineffective and/or if fetal demise is expected. It may be done either in the donor or in the recipient twin. In severe cases of early presentation of sFGR, when fetal death of sFGR fetus is expected, SFT may be the only option for the survival of the eutrophic twin. sFGR is reported to be 2–56% of indications for SFT. TRAP sequence is reported to be done in 12–40% with cardiac overload of the pump twin. Discordant fetal anomaly is done in about 35% of all SFT [3, 6–9]. In our series, indications differ between different techniques. BCC is done mostly for sFGR and TTTS, while ILC is done predominantly in TRAP sequence.

Gestational age plays an important role in SFT survival rate. The general attitude is that optimal results in SFT after 18–20 weeks are done by umbilical occlusion, while intrafetal methods are the choice in earlier gestation [3, 6, 8]. BCC is the best option after 18 weeks, to avoid introduction of a relatively large instrument into still small uterus. Pregnancy loss is reported to be 41% if done at 16–17 weeks, and 3% if done after 18 weeks. After 24 gestational weeks, umbilical diameter may exceed the forceps diameter, making complete and immediate occlusion impossible by BCC [6, 8]. ILC is best done in earlier gestation, as it is a needle method with the 17-gauge diameter needle. Failure of ILC if done after 18 gestational weeks is a consequence of enlarged vessels' diameter [3]. In our series, gestational age at BCC was optimal, done after 18 gestational weeks and before 24 weeks in 14 cases. Gestational age at ILC was lower, and complications occurred at higher gestational age.

Previous studies report that desirable instrument approach in BCC is directly into the amniotic sac of the "target" twin, which can be achieved in about 63% of cases. In cases with oligohydramnios in severe forms of sFGR or TTTS, amnioinfusion may be done previously. Occasionally, the instrument may be introduced through the healthy twin amniotic sac in order to avoid transplacental approach or if twins are in an unfavorable position, sometimes causing septostomy and iatrogenic MA pregnancy [3, 12]. We performed amnioinfusion in five cases and amnio-derivation in three cases, while in one case the instrument was introduced through the co-twin amniotic sac with accidental septostomy and late death of the co-twin. Operating time was not influenced by placental position or accessibility of the target twin amniotic sac, as we had previously performed amnion fusion. No previous intervention was done before ILC as intrafetal methods do not require previous interventions. SFT was successful in all cases regardless of the technique.

Early fetal death was registered three times (42.86%) after ILC; while late fetal death twice (13.33%) after BCC [6, 8]. As different techniques carry different perioperative risks, previous studies concluded that late fetal death is more frequent after BCC, while early fetal loss is more frequent after ILC [6, 8, 10]. Early fetal death in ILC may be the consequence of difficult needle maintenance in the abdomen for repeat coagulation and divergent energy dissemination, and/or prolonged time for complete cessation of blood flow with the risk of co-twin damage, which may explain three early co-twin deaths in ILC [12, 13, 14]. The cause of late fetal death, that may not always be explained, may be cord entanglement, compression of the co-twin with fibrous occluded cord, or amniotic band syndrome [5, 6, 9]. In our small series, there were two deaths of the co-twin after BCC. In one case, late death of the co-twin occurred as a consequence of the cord entanglement in iatrogenic MA pregnancy, while the other, which occurred at 16 + 4 weeks, could not be explained.

PPROM is reported to happen in 10–30% and is responsible for most preterm births [5, 6, 7, 10]. In our series, PPROM was registered in 22.73% (26.7% in BCC and 14.3% in ILC), while preterm birth occurred in 64.7% (69.2% in BCC and 50% in ILC).

Overall survival rate in MC pregnancies was 77.27%, but the difference was found according to the applied technique – 86.67% in BCC and 57.14% in ILC. Previous studies report both smaller and larger series of cases of SFT, with the survival rate similar to our own [5–9, 12, 15, 16, 17]. Less survival after ILC may be the consequence

if recruitment – fetal loss occurred only if SFT had been done after 16 gestational weeks, while BCC was always done at optimal gestational age. Concerning the limitations of the gestational age and technique, as well as the survival rate, BCC is the method of choice for SFT, except in cases where urgent SFT is required before 16 gestational weeks. Results from other authors about survival according to different indications for SFT report best survival in TTTS after BCC and in TRAP sequence after intrafetal methods, due to difficult BCC in short edematous cord in TRAP sequence [3, 15, 16, 17]. In our study comparison by indication could not have been done due to a relatively small number of cases.

Few studies report neonatal morbidity and mortality after SFT, and even fewer evaluate neurological or psychomotor development, reporting normal development in the age of two years in 70–92%, explaining impaired development by prematurity [15–20]. In our series, no specific neonatal morbidity was reported after both BCC and ILC, except for those that are a consequence of prematurity.

CONCLUSION

We may conclude that there is no ideal method of SFT in MH twins. Risk of co-twin death is lower after BCC than after ILC. There is no difference in the frequency of PPROM and PTD between the two methods. Success of each SFT method in MH twins depends upon correctly set indication, gestational age at procedure, and SFT technique. BCC is a method of SFT optimally done between 18 and 22 weeks in the cases when normal amniotic fluid is present in the "targeted" fetus amniotic sac and there is enough space for instrument manipulation. If that is not the case, previous amnioinfusion may be done. Interstitial methods may be the choice in the cases of severe oligohydramnios or anhydramnios, early gestation with small fetal volume and/or short umbilical cord of the targeted twin. ILC represents ultrasound-guided SFT method optimally done in 16 weeks, without the need for previous interventions. Concerning the fact that ILC is followed by great risk of early co-twin death, this method should be applied in selective cases with low dynamic circulation, or a less risky method should be applied. As better results were achieved after BCC at the Narodni Front Clinic for Gynecology and Obstetrics, this method became a standard for SFT in MH twins, except in cases of TRAP sequence before 16 weeks.

Conflict of interest: None declared.

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Селективна фетална терминација код монохорионских близанаца – исход трудноће после биполарне коагулације пупчаника и интерстицијалне ласерске коагулације

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САЖЕТАК
Увод/Циљ Циљ рада је приказати перинатални исход после селективне феталне терминације (СФТ) код монохорионских (МХ) трудноћа урађених биполарном коагулацијом пупчаника (БКП) и интерстицијалном ласерском коагулацијом (ИЛК).
Метод Током петогодишњег периода СФТ је урађена код 22 МХ трудноће – БКП код 15, а ИЛК код седам случајева. Регистровали смо индикацију за СФТ, гестацијску доб приликом СФТ, рану и касну смрт другог близанца, *PPROM* (претерминско прснуће плодових овојака), гестацијску доб на порођају/побачају, период од интервенције до порођаја/побачаја, начин порођаја, телесну масу неонатуса и петоминутни индекс Апгар.
Резултати Живорођеност је била значајно виша после БКП него после ИЛК (86,7 : 57,1%). Гестацијска доб приликом СФТ је била виша код БКП (20,2 ± 1,8 : 16,5 ± 1,7 недеља). Гестацијска доб на порођају/побачају је била нижа код ИЛК (32,5 ± 4,8 : 27,5 ± 9,5 недеља), али разлика није била значајна кад су поређени само живорођени (33,8 ± 3,7 : 34,7 ± 4,5 недеља). Није постојала разлика у периоду између интервенције и порођаја/побачаја (86,7 ± 33,7 : 77,1 ± 73 дана), али је период био значајно већи после ИЛК кад су поређени само живорођени (93,3 ± 33 : 133 ± 30,9 дана). Није постојала разлика у учесталости *PPROM* (26,7 : 14,3%), претерминског порођаја (69,2 : 50%), царског реза (84,6 : 75%), телесне масе неонатуса (2174 ± 82,4 : 2475 ± 823 *g*), ни индекса Апгар (7,7 ± 1,9 : 9,2 ± 1).
Закључак Не постоји идеални метод СФТ код МХ трудноћа, а успех сваке методе зависи од правилно постављене индикације, гестацијске доби приликом интервенције и технике СФТ. Степен живорођености је већи после БКП него после ИЛК. Пошто су у ГАК „Народни фронт" бољи резултати постигнути после БКП, ова метода је постала стандард за СФТ код МХ трудноћа, осим у случајевима секвенце *TRAP* пре 16 гестацијских недеља.
Кључне речи: селективна фетална терминација; монохорионске трудноће; биполарна коагулација пупчаника; интерстицијална ласерска коагулација