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The influence of cervical length on the outcome of laser treatment of twin-twin transfusion syndrome

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Objectives: Preoperative short cervical length (CL) remains a major risk factor for pregnancy loss and preterm birth after laser surgery for TTTS, but the optimal intervention to prolong pregnancy remains elusive. The objective was to analyze pregnancy loss in patients with monochorionic twins after intrauterine surgical treatment of TTTS.

Methods: Retrospective cohort study and analysis of postoperative pregnancy termination and preterm birth in patients with monochorionic twins complicated by TTTS. The study included 450 patients with monochorionic diamniotic twins who underwent FLC for TTTS from January 2013 to January 2024. Group 1 consisted of patients with preoperative cervix length of 3 cm and more (n=345), group 2 - with cervix length less than 3 cm (n=104), one patient was excluded from the study. Depending on methods of cervical shortening correction, the second group was divided into subgroups: 1 subgroup - pessary (n=53), 2 subgroup - cerclage (n=51). FLC was performed on patients with I-IV stages of TTTS. Transabdominal cordocentesis, intrauterine transfusion of erythrocyte mass to the surviving fetus with severe anemia was performed on 9 patients with stage V TTTS.

Table 1. Preoperative characteristics of patients						
Characteristics	Group 1 (n=345)	Group 2 (n=104)	p-value	Pessary (n=53)	Cerclage (n=51)	p-value
Age (years), Me [Q1; Q3] (min–max)	31,0 [27; 34] 16–43	30,5 [26,5; 35] 17–44	0,869	31 [27; 34,5] 19–39	30,5 [26,5; 35,0] 24–38	0,922
Body mass index (kg/m²), Me [Q1; Q3]	25 [23; 29]	25 [23;27]	0,145	24 [23; 28]	25 [22; 26]	0,531
Spontaneous pregnancy, n (%)	304 (88,1)	89 (85,6)		47 (88,7)	42 (82,4)	
Ovulation stimulation, n (%)	2 (0,6)	2 (1,9)		1 (1,9)	1 (2,0)	
IVF, n (%)	39 (11,3)	13 (12,5)		5 (9,4)	8 (15,7)	
Nullipara, n (%)	106 (31,0)	34 (32,7)		15 (28,3)	19 (37,3)	
Multipara, n (%)	203 (58,8)	61 (58,7)		30 (56,6)	31 (60,8)	
GA of diagnosis of the TTTS, Me [Q1; Q3]	20,5 [18,5; 22,1]	21,5* [20,0; 24,1]	<0,001	23,0 [21; 24,6]	21,5 [20,5; 23,1]	0,057
TTTS stage (R. Quintero):						
I, n (%)	52 (15,2)	20 (19,4)		8 (15,1)	12 (23,6)	
II, n (%)	168 (49,0)	42 (40,8) 30 (29,1)		19 (35,9) 18 (33,9)	23 (45,1) 12 (23,5)	
IV, n (%)	91 (26,5)	12 (10,7)		8 (15,1)	4 (7,8)	
V, n (%)	23 (6,7) 9 (2,6)	–		–	–	
Cervical length (cm), Me [Q1; Q3]	37 [35; 41]	24* [20; 26]	<0,001	24 [22; 27]	23,5* [17; 25]	0,022
Administration of the progesterone, n (%)	160 (46,4)	103 (99,0)		52 (98,1)	51 (100)	
Note: * – statistically significant differences, p<0.05						

Table 2. Postoperative complications and gestational age at birth						
Characteristics	Group 1 (n=345)	Group 2 (n=104)	p-value	Pessary (n=53)	Cerclage (n=51)	p-value
Termination of pregnancy after surgery, n (%)	17 (4,9)	6 (5,8)		2 (3,8)	4 (7,8)	
Preterm delivery, n (%)	178 (84,4)	59 (56,7)		28 (52,8)	31 (60,8)	
Preterm rupture of membranes, n (%)	12 (3,5)	10 (9,6)*	<0,05	5 (9,4)	5 (9,8)	
Single twin demise, n (%)	87 (25,2)	14 (13,5)		8 (15,1)	6 (11,8)	
Both twins demise, n (%)	12 (3,5)	3 (2,9)		–	3 (5,9)	
Amniotic membranes separation, n (%)	14 (4,1)	1 (1,0)		–	1 (2,0)	
Placenta abruption, n (%)	1 (0,3)	1 (1,0)		1 (1,9)	–	
Bleeding, n (%)	3 (0,9)	–		–	–	
Twin anemia polycythemia sequence, n (%)	7 (2,0)	3 (2,9)		–	3 (5,9)	
Septostomy, n (%)	10 (2,9)	4 (3,8)		1 (1,9)	3 (5,9)	
Gestational age at birth (weeks), Me [Q1; Q3]	31,8 [28,1; 35,0]	32,0 [26,3; 34,3]	0,281	32,35 [25,6; 35,2]	29,8 [27,35; 33,25]	0,330
Note: * – statistically significant differences, p<0.05.						

Results: No statistically significant increase in the frequency of pregnancy loss was found in patients with correction of cervical shortening. Spontaneous pregnancy loss within seven days after surgery occurred in 17 (4.9%) patients of the first group and in 6 (5.8%) patients of the second group. The median term of delivery was 31.8 and 32 weeks in the studied groups (p=0.281 and p=0.330). In the group of patients with cervical shortening was significantly more often premature rupture of membranes (p<0.05) regardless of the method of correction.

Conclusions: Postoperative pregnancy loss occurred in the group of patients with uncompromised cervix with the same frequency as in the group with a moderately shortened cervix.

