



Prediction of spontaneous preterm delivery by cervical length measurement in high-risk pregnancies treated with cervical cerclage and progesterone

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Objective

Cervical cerclage and progesterone are effective treatment preventing spontaneous preterm delivery (SPTB) and there are some evidences suggesting for additional effect combining both therapies. Transvaginal (TV) ultrasound (US) measurement of cervical length (CL) after cerclage showed some potential predictive value for SPTB. The aim of our study was to evaluate cervical length US measurement as a predictor of SPTB in a cohort of patients treated with cerclage and progesterone.

Methods

Monocentric retrospective collection of consecutive cases from year 2007 to 2017 undergoing cervical cerclage for high risk of SPTB (history of SPTB, short cervix at US or abnormal physical exam). Since 2008 all cases undergoing cerclage were treated with additional progesterone (200 mg daily vaginal natural progesterone or 250 mg weekly intramuscular 17-OH progesterone). Cervical cerclage was carried out with Macdonald or Shirodkar technique. TV-US CL was carried out and recorded preoperatively, postoperatively and in subsequent follow up visit at a median of 4 weeks from the procedure. Delta TV-US CL were calculated as following: Delta CL pre-op= TV-US CL preoperative - TV-US CL postoperative; Delta CL post-op= TV-US CL postoperative - TV-US CL at follow-up. Outcome of pregnancy was collected including major neonatal complications.

Results

64 consecutive cerclages were collected. 33/64 (51. 5%) were indicated by previous history of SPTB and 31/64 (48. 5%) by short cervix <15 mm (20 cases were asymptomatic and diagnosed by US, 11 cases were symptomatic and/or diagnosed by abnormal physical exam). IVF/ICSI pregnancy were 10/64 (15. 6%), of which 4 (12. 1%) in the history group and 6 (19. 4%) in the short cervix group. Gestational age (GA) at cerclage was significantly lower in the history group (median 14 weeks; IQR 13-15) as compared to the short cervix group (median 21 weeks; IQR 17-23; $p < 0. 001$). Progesterone was administered in 59 cases (39 with natural Pg and 20 with 17OHPg). Maternal age, ethnic group, and other demographic characteristics were not different between the groups. Median gestational age at birth was 37 weeks (IQR 34-39) in the overall group, in the short cervix group was 37 weeks (IQR 27-38) and in the history group was 37 weeks (IQR 38-39). Incidence of SPTB<37 weeks was 11/31 (35. 5%) in the short cervix group and 4/33 (12. 1%) in the history group ($p < 0. 001$). Perinatal mortality was 4/31 (12. 9%) and 2/33 (6. 1%) in the two groups, respectively ($p < 0. 001$). Delta CL pre-op or post-op in the group undergoing cerclage for history and delta CL preop in the short cervix group did not show significant correlation with gestational age at birth. Delta CL postop in the short cervix group presented a significant correlation with gestational age at birth ($R=0. 3130$, $p= 0. 04$, one tail).

Conclusion

Postoperative TV-US CL does not predict GA at birth in patients undergoing cerclage for history of PTB. Postoperative TV-US CL after cerclages indicated by short cervix is a potential predictor of GA at spontaneous birth in patients treated with progesterone. In particular, the extent of longitudinal cervical shortening appears more promising than the extent of cervical length improvement after cervical cerclage in the prediction of SPTB.