

EP05.47 Risk factors for umbilical cord ulcers in congenital duodenal and jejunal atresia

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Introduction

Umbilical cord ulcers (UCUs) associated with congenital duodenal or jejunal atresia can result in fetal or neonatal death due to sudden hemorrhage. However, the risk factors of UCU remain unknown.

Aim

To clarify the clinical course of fetal duodenal and jejunal atresia and identify the risk factors for UCUs.

Methods

- Prospective, multicenter, observational study between November 2020 and March 2024
- Fetuses with congenital duodenal and jejunal atresia were registered.
- Amniotic fluid was collected whenever possible.
- The pathological diagnosis of UCUs was classified into grade 0 to 4 (Figure 1).
- Primary outcome: UCU grade 3 and 4.

Result

A total of 121 patients were enrolled, and 114 were included in the analysis. UCU grade 3 and 4 were observed in 10 (9%) and 14 (12%), respectively.

Jejunal atresia	24 (21%)	Fetal death	4 (4%)
Polyhydramnios	73 (64%)	Neonatal death	6 (5%)
Premature delivery	65 (57%)	Trisomy 21	33 (29%)

Univariate analysis	Odds ratio (95% CI)
Jejunal atresia (vs. duodenal atresia)	3.88 (1.44–10.45)
Polyhydramnios	0.38 (0.15–0.96)
Trisomy 21	0.29 (0.08–1.03)
Direct bilirubin in amniotic fluid (per 0.1mg/dL increase)	1.36 (1.09–1.69)

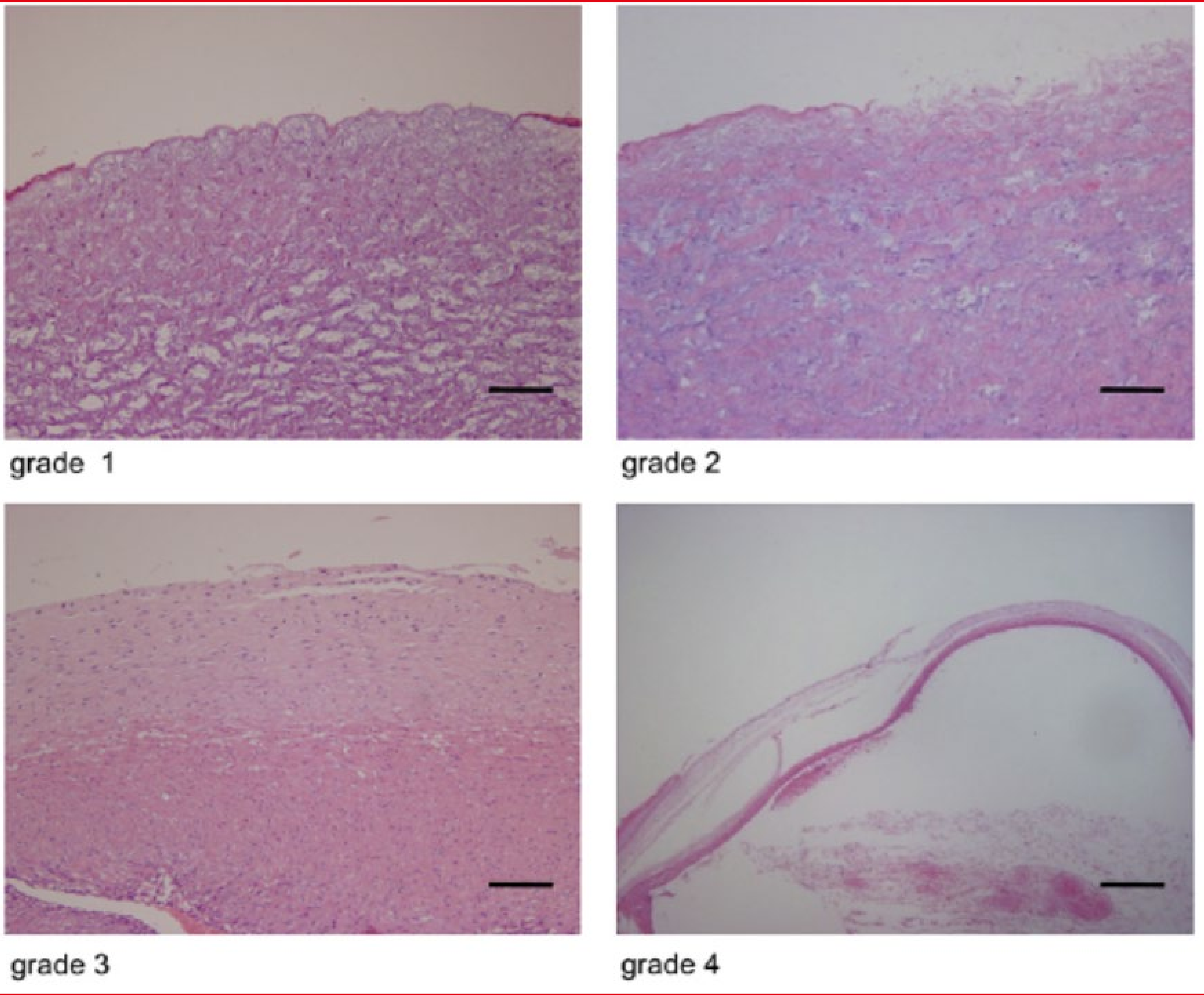
Multivariate analysis

$$\ln(P1-P) = -0.705 - 1.11 \cdot x(\text{Polyhydramnios}) - 2.33 \cdot x(\text{Trisomy 21}) + 1.94 \cdot x(\text{direct bilirubin concentration in amniotic fluid})$$

AUC 0.793 (Figure 3)

Conclusion

Absence of polyhydramnios, absence of trisomy 21, and elevated direct bilirubin concentrations in amniotic fluid were identified as risk factors for UCUs.



Ichinose M, et al. Placenta (2010)

Figure 1. The pathological diagnosis of UCUs:
grade 0, no epithelial loss
grade 1, epithelial dissection only
grade 2, basement membrane loss
grade 3, extensive basement membrane loss with Wharton's jelly thinning
grade 4, exposure of umbilical cord vessels.



Figure 2. The photo of UCU grade 4

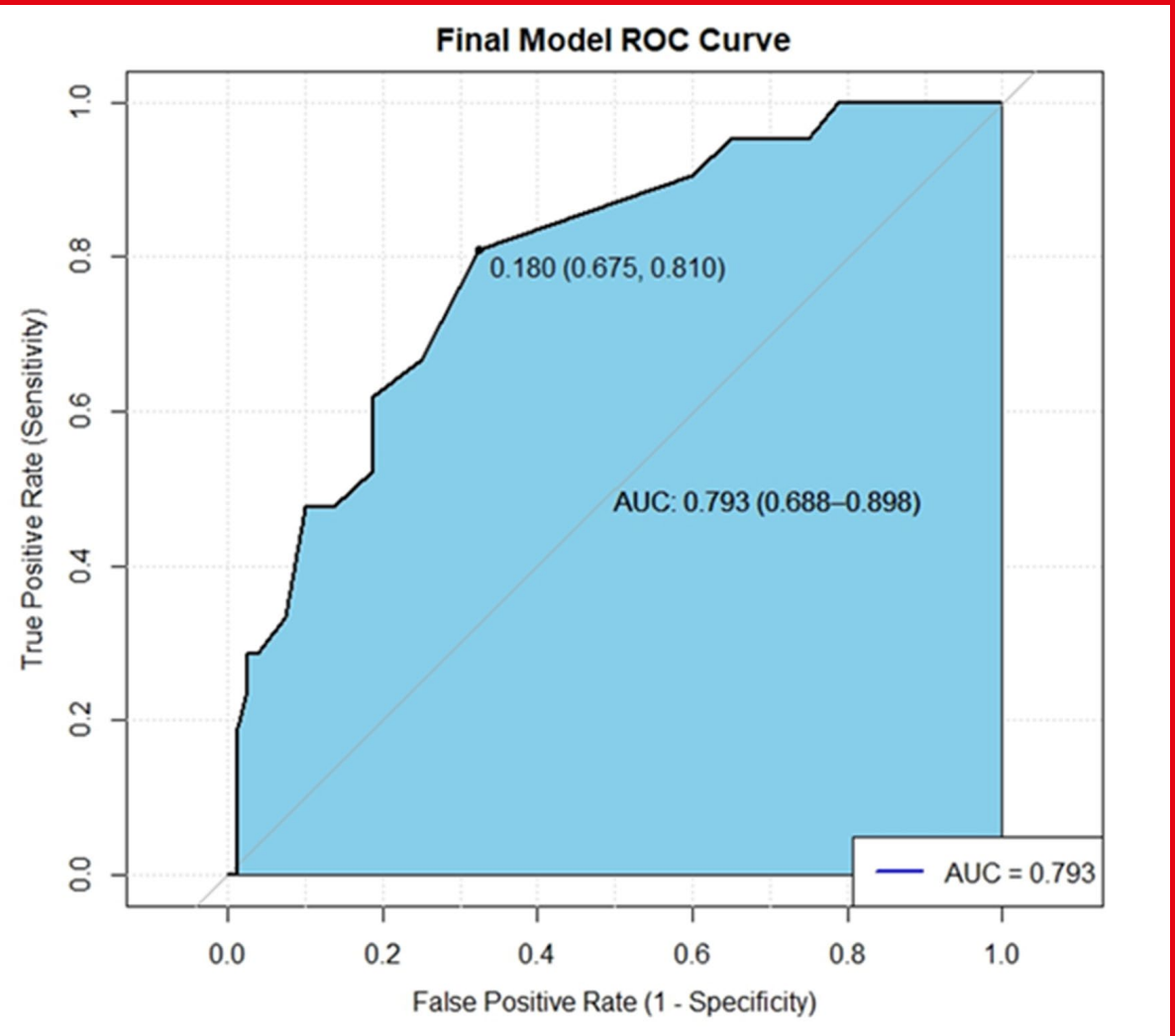


Figure 3. ROC curve of the predictive model