Title: Percutaneous Transesophageal Gastrostomy (PTEG), An Alternative for Patients with Contraindications to Traditional Gastrostomy: Technical Report and Meta-Analysis.

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Abstract:

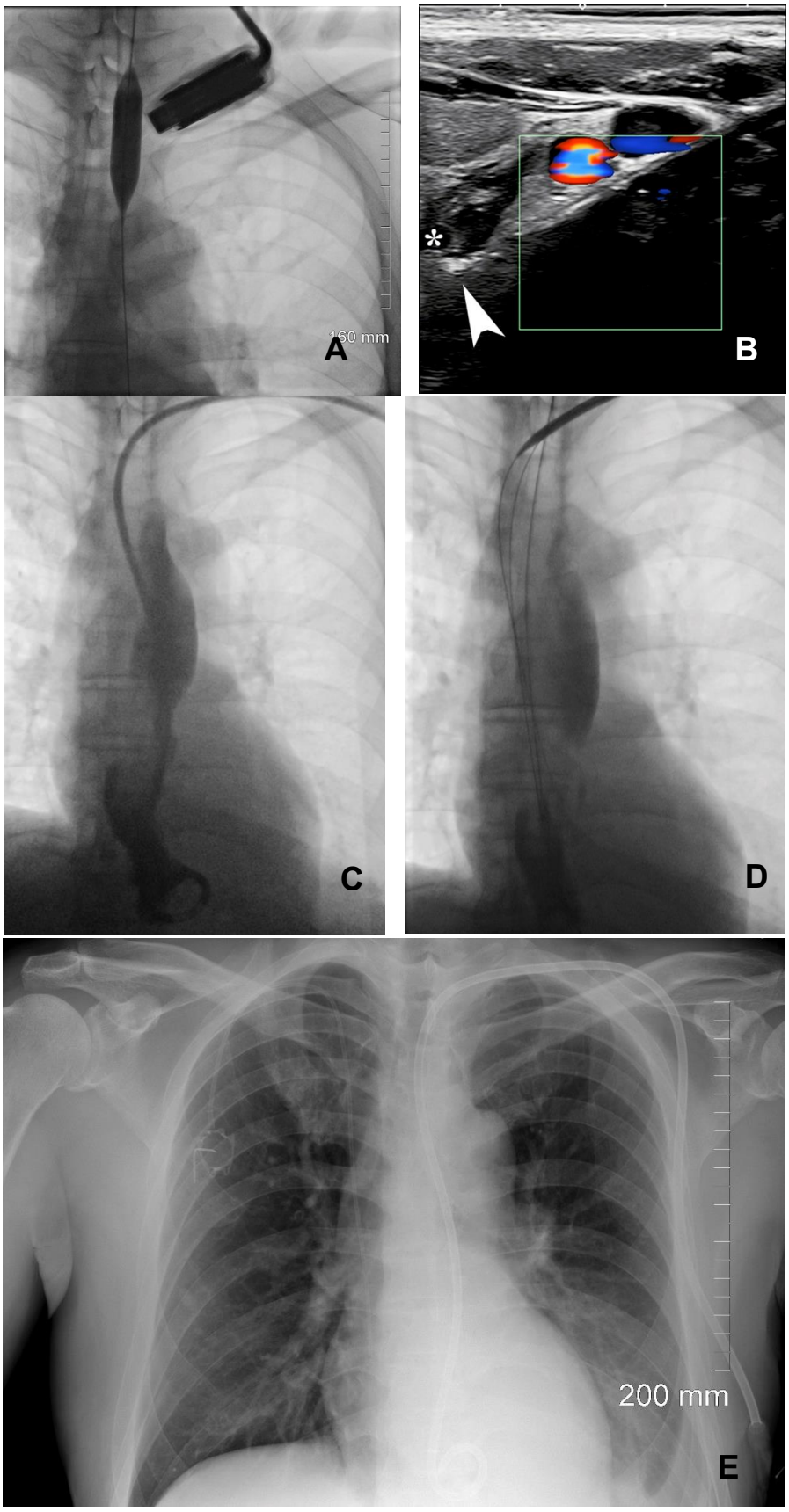
Background: This study aims to report institutional experience and perform a pooled analysis of published cases undergoing percutaneous transesophageal gastrostomy (PTEG).

Methods: Three patients (2 females, 1 male; mean age: 54 years) with contraindications for traditional gastrostomy tube placement underwent PTEG tube placement. All procedures were technically and clinically successful with no immediate adverse events. Long-term complications included multiple tube dislodgements (n=1) and discomfort due to clogging within 2 weeks of tube placement (n=1) necessitating tube removal.

PubMed was queried to identify publications related to PTEG (n=146). After exclusion of non-relevant studies, a total of 13 studies with 4327 patients were included in the final analysis. Pooled analysis of publications was performed using random-effect meta-analysis and meta-regression techniques.

Results: There were 10 retrospective and 2 prospective studies and 1 randomized controlled trial. The indication of PTEG was feeding (23%), decompression (23%) or both (54%). The patients' mean age was 68±3 years, with overall male-to-female ratio of 1.6:1. Pooled technical and clinical success rates were 99%, and pooled overall and major complication rates were 20% and 3%, respectively. The most reported complications were tube dislodgement (5%), insertion site infection (3%) and bleeding (3%). No cases of mediastinitis were reported. The mean follow-up duration was 339 days. There was no statistically significant association between overall complication rates and study follow-up duration.

Conclusion: Balloon-assisted percutaneous transesophageal gastrostomy (PTEG) tube placement is an effective and safe procedure when a more traditional approach is not technically feasible.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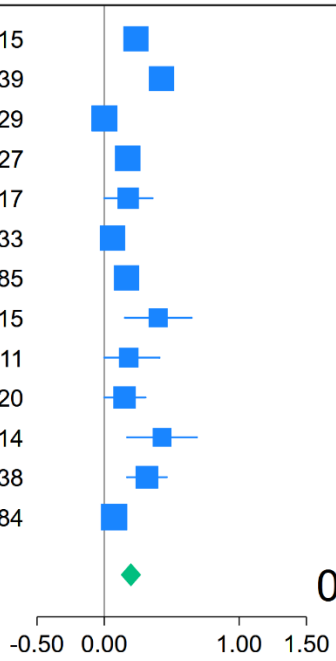
Overall complications

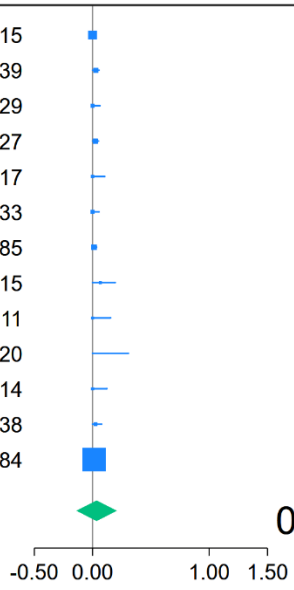
Study	Number of successes	Total	Proportion with 95% CI	Weight (%)
Oishi, 2003	27	115	0.23 [0.16, 0.31]	9.06
Hachisuka, 2006	59	139	0.42 [0.34, 0.51]	8.95
Kato, 2007	0	29	0.00 [0.00, 0.06]	9.67
Tokumitsu, 2007	22	127	0.17 [0.11, 0.24]	9.31
Udomsawaengsup, 2008	3	17	0.18 [0.00, 0.36]	6.32
Aramaki, 2013	2	33	0.06 [0.00, 0.14]	8.97
Murakami, 2013	14	85	0.16 [0.09, 0.24]	9.02
Toh Yoon, 2017	6	15	0.40 [0.15, 0.65]	4.77
Iwase, 2018	2	11	0.18 [0.00, 0.41]	5.20
Aramaki, 2020	3	20	0.15 [0.00, 0.31]	6.97
Sanogo, 2020	6	14	0.43 [0.17, 0.69]	4.55
Rotellini-Coltvet, 2023	12	38	0.32 [0.17, 0.46]	7.21
Nakama, 2024	268	3,684	0.07 [0.06, 0.08]	10.02
Overall			0.20 [0.12, 0.27]	



Random-effects REML model

Major complications

Study	Country	Complications	Total	Proportion with 95% CI	Weight (%)
Oishi, 2003	Japan	0	115	0.00 [0.00, 0.02]	7.84
Hachisuka, 2006	Japan	4	139	0.03 [0.00, 0.06]	1.44
Kato, 2007	Japan	0	29	0.00 [0.00, 0.06]	0.53
Tokumitsu, 2007	Japan	3	127	0.02 [0.00, 0.05]	1.60
Udomsawaengsup, 2008	Thailand	0	17	0.00 [0.00, 0.10]	0.19
Aramaki, 2013	Japan	0	33	0.00 [0.00, 0.06]	0.68
Murakami, 2013	Japan	1	85	0.01 [0.00, 0.03]	2.12
Toh Yoon, 2017	Japan	1	15	0.07 [0.00, 0.19]	0.07
Iwase, 2018	Japan	0	11	0.00 [0.00, 0.15]	0.09
Aramaki, 2020	Japan	3	20	0.15 [0.00, 0.31]	0.05
Sanogo, 2020	USA	0	14	0.00 [0.00, 0.12]	0.14
Rotellini-Coltvet, 2023	USA	1	38	0.03 [0.00, 0.08]	0.43
Nakama, 2024	Japan	47	3,684	0.01 [0.01, 0.02]	84.82
Overall				0.03 [-0.14, 0.21]	



Random-effects REML model