CRITICAL REVIEW FORM:
THERAPY ARTICLES

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Citation: Arms JL, Mackenberg-Mohn MD, Bowen MV, et al. Safety and efficacy of a protocol using bougienage or endoscopy for the management of coins acutely lodged in the esophagus: a large case series. *Ann Emerg Med*. 2008;51(4):367-372.

Study Objective: Observational case series to report experience using bougienage procedure in management of esophageal coins by measuring primary outcomes definition by complications, efficacy, charges, length of stay, and return to hospital.

Study Methodology: Observational retrospective case series in 2 university-affiliated pediatric emergency departments (EDs) Children's Hospital Minnesota and Universidad de Ciencias Medicas, San Jose, Costa Rica, with a combined census of 75,000 visits per year. The study period was August 1, 1994, through August 31, 2006. Because of the length of the study period, authors elected to report cost and time data for only the last 2 years of the study.

GUIDE	COMMENTS
I. Are the results valid?	
A. Did experimental and control groups begin the study with a similar prognosis	
1. Were patients randomized?	No patients were not randomized. The hospital esophageal coin protocol was applied and patients were directed toward bougienage or endoscopy route. The choice of procedure was likely based upon the clinician's and or parents choice. Hospital protocol eligible bougienage 1. witnessed single coin ingestion 2. ingestion <24 hours 3. coin in esophagus confirmed on xray 4. no hx of previous esophageal FB, esophageal surgery, strictures, or other esophagus disease

2. Was randomization concealed (blinded)? In other words, was it possible to subvert the randomization process to ensure that a patient would be "randomized" to a particular group?	It was not blinded. Chart review completed using ICD-9 code for esophageal FB. Authors were trained in chart abstraction and no authors were blinded. Patients charts were reviewed for age, sex, type of coin, duration of ingestion, symptoms on presentation, management modality, complications during or after procedure, and return to hospital in 2 weeks. No mention of data abstractors being blinded to objectives of study.
3. Were patients analyzed in the groups to which they were randomized?	NA
4. Were patients in the treatment and control groups similar with respect to known prognostic factors?	Hard to say. The patient characteristics (Table 1) were minimally reported and included just average age and type of coin ingested. Important data such as location of coin, symptoms, time since ingestion were not included.
5. Were patients aware of group allocation?	NA
6. Were clinicians aware of group allocation?	NA
7. Were outcome assessors aware of group allocation?	NA
8. Was follow-up complete?	Not completely. Total of 1232 charts were identified. Ten records were lost. All charts reviewed for the 2 week follow up or any follow up however there was no accounting for follow up at other facilities.
What are the results ?	
1. How large was the treatment effect?	Success rate for bougienage was 355 of 372 (95.4%) compared to endoscopy which was 100%. Authors report unsuccessful cases were "on average, 6 months younger than those with successful bougienage and were more likely to have pain or dysphagia on presentation. No differences in complication rates.

	Length of stay with successful bougienage was on average 2.2 hrs. compared to 11 hrs. with endoscopy. Hospital charges on average were $1884.00 for successful bougienage and $5999.00 for endoscopy
2. How precise was the estimate of the treatment effect? (CI's?)	NA
III **How can I apply the results to patient care?**	
1. Were the study patients similar to my patient?	Yes! Same peds population we see. Average age 3.7 years.
2. Were all clinically important outcomes considered?	Yes and these included complications, efficacy of procedure, charges, length of stay, and return to hospital. No mention of patient or provider preferences.
3. Are the likely treatment benefits worth the potential harm and costs?	Yes. Using bougienage technique in an appropriate population may demonstrate significant savings in both cost and time.

Limitations:
Observational retrospective study. Chart review depended on the quality of the author of charts and subjective to documentation. Some ICD-9 code errors could have occurred thus not being as inclusive as it otherwise could be. Provide training on bougienage technique at cite was not described. Patient characteristics were minimally described making correct patient selection unclear. Almost 25% of those eligible for bougienage underwent endoscopy. No mention of differences in success rate between trainees and attendings. The authors state "22% had pain or appeared anxious; 14% had respiratory symptoms such as cough, wheezing, stridor, choking, or difficulty breathing; 36% had symptoms of drooling, gagging, or vomiting; and 41% had no symptoms" however, no mention of group distribution in the more symptomatic patients

Clinical Bottom Line:

If screened properly, patients who qualify for bougienage technique show a highly successful and safe alternative to endoscopic removal of esophageal coin.