

Treatment of Pediatric Epistaxis: A Systematic Review and Meta-Analysis

Introduction

- **Pediatric epistaxis** is most commonly caused by **dry nasal mucosa and digital trauma** to the anterior septum (**Kiesselbach's Plexus**) and accounts for up to **1 in every 200 emergency department visits**.¹
- Current literature approximates the **prevalence** of recurrent pediatric epistaxis of **9%**.²
- While interventions for recurrent epistaxis in adults and epistaxis caused by inherited disorders (i.e. HHT) are well documented, there is a paucity of literature focused on **idiopathic pediatric epistaxis**.
- This review includes evidence on commonly used interventions including **observation, topical emollients, silver nitrate cautery**, and a **combination** of these agents.

Methods and Materials

- **PubMed, Embase, and Web of Science** databases were queried and this review was conducted in accordance with the **2020 PRISMA guidelines**.
- The **primary outcome** measured was **resolution of epistaxis at primary follow up**.
- A **meta-analysis of pooled success rate** with an **inverse variance statistical method** and fixed effects analysis model was performed.
- The **methodological index for non-randomized studies (MINORS)** criteria was used to assess quality of studies.



Figure 3: Endoscopic view of Kiesselbach's Plexus in Anterior Septum

Results

- Of the **579 abstracts** initially screened, **17 full-text articles** were included in this review consisting of **1,315 patients**.
- In the included studies which reported ages and gender, the **average age** in the pediatric population was **9.7 years** old; 61% of the patients were male while 39% were female.
- The **average MINORS score** of included studies was **moderate** at **12.9**.
- **Silver nitrate cautery** was the **most reported treatment** modality analyzed in **42.8%** of included studies while **topical emollients** were the **second most reported** treatment modality analyzed in **29%** of included studies.
- The meta-analysis demonstrated the following pooled rates of complete resolution of epistaxis:
 - **Observation** - **42%** (3 studies, 95% CI 0.31-0.53);
 - **Topical treatments (emollients, antiseptic creams)** - **65%** (4 studies, 95% CI 0.58-0.72)
 - **Silver nitrate cautery** - **79%** (6 studies, 95% CI 0.74-0.84)
 - **Silver nitrate cautery with topical treatments**- **69%** (2 studies, 95% CI 0.65-0.73)
 - **Propranolol** - **86%** (2 studies, 95% CI 0.77-0.95)
 - **Microwave ablation** - **93%** (2 studies, 95% CI 0.88-0.98)

Highlights

- Of the **579 abstracts** initially screened, **17 full-text articles** were included in this review. (**Figure 2**)
- **14 of 17 studies** were included in the meta-analysis of pooled rates of complete resolution of epistaxis. (**Figure 1**)
- **Silver nitrate cautery** and **topical treatments**, either in **conjunction or individually**, are effective treatments for recurrent pediatric epistaxis.
- **Oral propranolol** and **in-clinic microwave ablation** are promising treatments that warrant further study.
- **Observation alone** is **unlikely** to provide resolution of recurrent pediatric epistaxis.

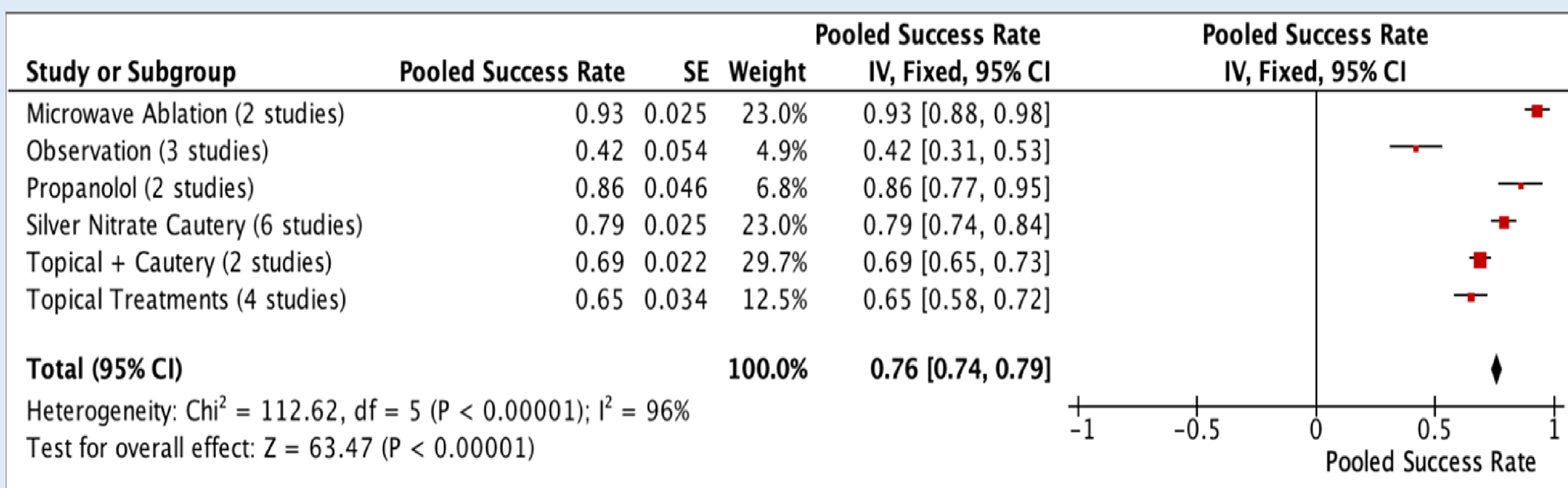


Figure 1: Forest Plot of Meta-Analysis of Success Rates of Pediatric Epistaxis Management. Diamond, overall effect estimate; square, point estimate of the study; black line, 95% CI

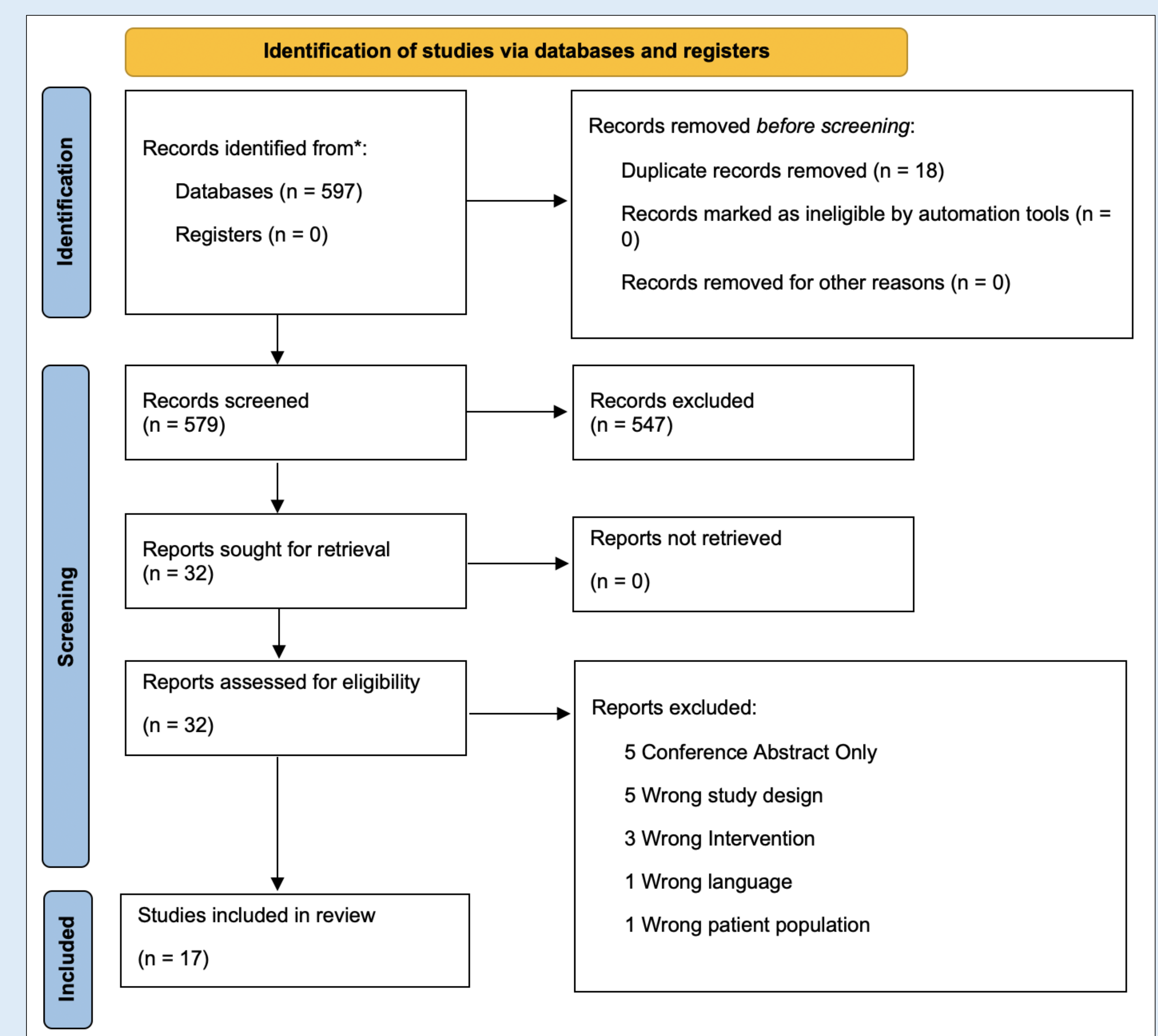


Figure 2: PRISMA Flow Diagram for Systematic Review of Treatment of Pediatric Epistaxis.

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