

# Is there any correlation between duration of vomiting before pyloromyotomy and eradication of symptoms after pyloromyotomy in hypertrophic pyloric stenosis?

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## Abstract

**Introduction** Hypertrophic pyloric stenosis (HPS) is among common GI disorders in young infants, with an incidence of 1-2:1000 live births in the world. In this study, we wanted to investigate the correlation between duration of symptoms before surgery and eradication of symptoms after pyloromyotomy in HPS.

**Materials and methods** One hundred and twenty five (102 boys and 23 girls) patients with suspected infantile HPS were treated surgically by Ramstedt pyloromyotomy between 2004 and 2014 at pediatric surgery ward of Tabriz Children's Hospital, Iran. The demographic features, clinical findings, diagnostic work-up and postoperative specifications of the patients were studied retrospectively.

**Results** We studied 125 patients with HPS. Male to female ratio was 4:1. The patients were 16 to 90 days of old and the mean age was  $39 \pm 1.42$  days. The range of pyloric canal length was 7.60 to 29.00 mm and the mean length was  $19.54 \pm 3.42$  mm. Pyloric muscle diameter was 2.70 to 9.00 mm and the mean diameter was  $4.86 \pm 1.14$  mm. Seventy two percent of patients had episodes of vomiting after operation. Mean time of persistence of vomiting after pyloromyotomy was  $15.73 \pm 0.15$  hours. Mean discharge time was  $55.22 \pm 0.08$  hours. Radiologic findings did not show any significant correlation with persistence of vomiting or discharge time.

**Conclusion** The present study revealed that duration of vomiting before surgery and continuing symptoms could not predict postoperative symptom eradication after pyloromyotomy in HPS.

## Keywords

- hypertrophic pyloric stenosis
- pyloromyotomy
- vomiting

## Introduction

Hypertrophic pyloric stenosis (HPS) in infants which is hypertrophy of the smooth muscle of the pylorus will lead to obstruction of the gastric outlet.<sup>1,2</sup> It is classically seen in 4-6 weeks old boys, who present with projectile non-bilious vomiting after feeding.<sup>1,4</sup> Now a days mortality from HPS in infants have reduced significantly due to pyloromyotomy techniques along with improvements in pediatric anesthesia and treatments available for electrolyte correction.<sup>5</sup> Prolonged GOO will ultimately result in acid and electrolyte disturbances and gastric atony, thus delaying postoperative recovery.<sup>6</sup> Theoretically, delayed presentation or extended duration of vomiting in HPS could lead to a more severe associated electrolyte abnormalities and thus delay the onset of surgical intervention. It should be noted that 12 to 18 hours after pyloromyotomy, gastric motility will be normal<sup>3</sup>, Also we could assume that the duration of preoperative symptoms could actually impact the postoperative regain of gastric motility and the ability of the infant to tolerate full feeding and thus prolong the hospitalization.<sup>6</sup> We investigated the correlation between prolonged vomiting preoperatively on the post-operative outcomes in HPS.

## Materials and methods

In this retrospective study we included all the patients who underwent pyloromyotomy with suspected infantile HPS treated in the University Children's Hospital of Tabriz, Iran; between May 2003 and March 2013. The medical records of 124 infants were reviewed retrospectively and analyzed. All premature infants as well as infants who were febrile and Septic appearing or those suffering from bilious emesis were excluded. There were 102 boys and 23 girls, with a median age of 35 days (range: 16 to 90 days). Diagnosis was confirmed either by imaging or clinical findings followed by intraoperative verification. Open pyloromyotomy was performed after adequate resuscitation. Feeding was started 6 hours after the operation and advanced gradually.

Demographic features, clinical findings, diagnostic work-up, type of operation and postoperative findings were collected from their records. Duration of vomiting at presentation was calculated from the onset of projectile vomiting to the day of presentation to our institution. In order to eliminate the confounding impact of infant's age in vomiting duration, we presumed it to be a control factor. This was then correlated with the time of vomiting persistence after surgery (in hours) and postoperative hospitalization (in days). We excluded patients who developed morbidities due to surgical technical error. We used Paired sample (student) T test and Pearson correlation coefficient for comparative analysis of continuous variables.

## Results

During the study 125 patients (102 boys, 23girls) with suspected diagnosis of infantile HPS admitted at the University Children's Hospital of Tabriz were evaluated of which 124 cases underwent surgery (pyloromyotomy) and one patient left the hospital against medical advice. Diagnosis was confirmed by ultrasound in 117 cases, barium meal in one case and in others clinical findings were confirmed by intraoperative findings. The male: female ratio was 4.43:1, and the median and mean ( $\pm$ SE) of age at presentation were 35 (1-90) and 39.06 ( $\pm$ 1.42) days, respectively. The mean duration of vomiting in 122pts was  $13.96 \pm 1.140$ . Eight (6.4%) of our patients had been symptomatic for more than 4 weeks (Information of 3pts about vomiting duration were not available).

In patients who underwent surgery, only 90 pts suffered from vomiting after the operation. The median of vomiting persistence after pyloromyotomy were 7-12 hours. The median (SE) and mode of total duration of postoperative hospitalization were 25-48 hours (0.086). Data regarding patient age, weight, pyloric canal anatomy and vomiting is summarized in **Table 1**.

**Table 1** Data regarding patient age, weight, pyloric canal anatomy and vomiting

Gender	Male	Female
Age (N Mean $\pm$ SD)	102 (39.1 $\pm$ 1.4)	23 (38.80 $\pm$ 4.0)
Admission Weight (N Mean $\pm$ SD)	102 (3851.1 $\pm$ 77.3)	23 (3538.7 $\pm$ 548.9)
Pyloric canal length (N Mean $\pm$ SD)	92 (19.6 $\pm$ 0.3)	19 (18.9 $\pm$ 0.5)
Pyloric muscle diameter (N Mean $\pm$ SD)	110 (4.8 $\pm$ 0.1)	21 (4.9 $\pm$ 0.3)
Vomiting persistence after pyloromyotomy (N Mean $\pm$ SD)	101 (15.8 $\pm$ 2.0)	23 (15.1 $\pm$ 1.9)
Discharge time after pyloromyotomy (N Mean $\pm$ SD)	100 (55.20 $\pm$ 2.4)	23 (55.30 $\pm$ 4.1)

N – Number; SD – Standard Deviation

We compared vomiting duration before PM and vomiting persistence after that. There was no correlation between the time of surgery and early symptom relief. At last, with age as a control factor, vomiting duration had a significant correlation with hospitalization of patients (P=0.049).

## Discussion

It seems obvious that the standardized protocols in the management of HPS will lead to shorter hospitalization and cost savings<sup>7-9</sup> but our results are clearly different from that of others. There was an obvious delay in the presentation of HPS in our patients, the duration of projectile vomiting before presentation in our patients had a median of 10 (1-90) days and a mean of 13.96 days, this is different from the study by White et al. which had a median of 5 (1-35) days<sup>5</sup> and the study of Van den Ende et al. which had a mean of 5.5 (5.1) days in a general hospital<sup>10</sup> and 9.9 (9.7) days in specialized pediatric surgery unit.<sup>10</sup> Moreover, 6.8% of our patients did not present until their duration of vomiting had exceeded 4 weeks. The limited availability of specialized pediatric care may be the reason for the delay in making the diagnosis. Theoretically, delayed

presentation or extended duration of vomiting in HPS could lead to a more severe associated electrolyte abnormalities and thus delay the onset of surgical intervention. It should be noted that 12 to 18 hours after pyloromyotomy, gastric motility will be normal.<sup>3</sup> Also we could assume that the duration of preoperative symptoms could actually impact the postoperative regain of gastric motility and the ability of the infant to tolerate full feeding and thus prolong the hospitalization.<sup>6,11</sup> Yet, our study did not establish any relationship between the duration of symptomatic GOO and persistent vomiting after PM and time to tolerate of liquid diet. In conclusion, our data shows cases which have had surgery after a delayed diagnosis can still be fed as early as those who have presented earlier. Future studies with a larger sample could help in identifying the role of symptoms duration before treatment in the disease outcome.

## References

1. Hernanz-Schulman M: Infantile hypertrophic pyloric stenosis. *Radiology* 2003; 227:319-31.
2. Sherwood W, Choudhry M, Lakhoo K: Infantile hypertrophic pyloric stenosis: An infectious cause. *Pediatr Surg Int* 2007; 23:61-3.
3. Mitchell LE, Risch N: The genetics of infantile hypertrophic pyloric stenosis. A reanalysis. *Am J Dis Child* 1993; 147:1203-11.
4. Velaoras K, Bitsori M, Galanakis E, et al: Hypertrophic pyloric stenosis in twins: Same genes or same environments. *Pediatr Surg Int* 2005; 21:669-71.
5. White JS, Clements WD, Heggarty P, et al: Treatment of infantile hypertrophic pyloric stenosis in a district general hospital: A review of 160 cases. *J Pediatr Surg* 2003; 38:1333-6.
6. Ayman Al-Jazaeri, Abdullah Al-Shehri, Mohammad Zamakhshary, et al: Can the duration of vomiting predict postoperative outcomes in hypertrophic pyloric stenosis? *Ann Saudi Med.* 2011 Nov-Dec; 31(6): 609-612.
7. Michalsky MP, Pratt D, Caniano DA, et al: Streamlining the care of patients with hypertrophic pyloric stenosis: Application of a clinical pathway. *J Pediatr Surg.* 2002; 37:1072-5.
8. Garza JJ, Morash D, Dzakovic A, et al: Ad libitum feeding decreases hospital stay for neonates after pyloromyotomy. *J Pediatr Surg.* 2002; 37:493-5.
9. Leinwand MJ, Shaul DB, Anderson KD: A standardized feeding regimen for hypertrophic pyloric stenosis decrease length of hospitalization and hospital costs. *J Pediatr Surg.* 2000; 35:1063-5.
10. Van den Ende ED, Allema JH, Hazebroek FW, et al: Can pyloromyotomy for infantile hypertrophic pyloric stenosis be performed in any hospital? Results from two teaching hospitals. *Eur J Pediatr.* 2007; 166:553-7.
11. St Peter SD1, Holcomb GW 3rd, Calkins CM, et al: Open versus laparoscopic pyloromyotomy for pyloric stenosis: A prospective, randomized trial. *Ann Surg.* 2006; 244:363-70.