

Surgical Approaches for Management of Infantile Hypertrophic Pyloric Stenosis

An Essay

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالُوا سُبْحَانَكَ لَا عِلْمَ

لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ

أَنْتَ الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم

سورة البقرة، الآية الثانية والثلاثين

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List of Abbreviations

GRP	Gastrin-releasing peptide.
JPS	Journal of pediatric surgery.
IHPS	Infantile hypertrophic pyloric stenosis.
Kg	Kilogram.
LPM	Laparoscopic pyloromyotomy.
Mm	Millimeter.
RUQ	Right upper quadrant (pyloromyotomy).
UGI	Upper gastrointestinal (contrast examination).
UMB	Circum-umbilical (pyloromyotomy).
US	Ultrasonogram.
VIP	Vasoactive intestinal polypeptide.
Wk	Week.

INTRODUCTION

Infantile hypertrophic pyloric stenosis (IHPS) is a condition affecting young infants, in which the pyloric portion of the stomach becomes abnormally thickened and manifests as obstruction to gastric emptying (functional gastric outlet obstruction). It is the most common cause of intestinal obstruction in infancy (**Hernanz-Schulman, 2003**).

This condition is the most common surgical cause of vomiting in early infancy, with its clinical presentation evident in the first few weeks of life (**Guzzetta et al., 1999**).

The incidence of IHPS is approximately two to five per 1,000 live births per year in most white populations, although it varies with the geographic area (**Jedd et al., 1988**) (**Applegate and Druschel, 1995**).

Infantile hypertrophic pyloric stenosis is less common in India and among black and Asian populations, with a frequency that is one third to one fifth that in the white populations (**Schechter et al., 1997**).

The male-to-female ratio is approximately 4:1, with reported ratios ranging from 2.5:1 to 5.5:1 (**Mitchell and Risch, 1993**).

In 1717, Blair first reported autopsy findings of pyloric stenosis, although the description of the signs and symptoms of IHPS can be found in the 17th century, the clinical picture and pathology were not accurately described until 1887 by the Danish pediatrician, Hirschsprung. Prior to 1912, early successful surgical procedures included gastroenterostomy, pyloroplasty and forcible dilatation via gastrostomy. In 1912, Ramstedt observed an uneventful recovery in a patient following pyloroplasty, where sutures used in reapproximating the seromuscular layer had disrupted. Following this observation, he began leaving the split muscle layer unsutured in all subsequent repairs. The Ramstedt pyloromyotomy remains the standard procedure for pyloric stenosis today (**Caceres and Liu, 2003**).

Traditional treatment of IHPS has been an open pyloromyotomy, i.e. a seromuscular splitting of the pylorus or “pyloromyotomy,” with preservation of an intact mucosal lining. During this operation, the surgeon is able to

palpate and determine whether the hypertrophied pylorus has been completely divided (**Ostlie et al., 2004**).

This basic technique has been proven safe and effective, but the surgical approach to this procedure has been largely debated (**Caceres and Liu, 2003**).

The gold standard surgical approach for pyloromyotomy used to be through a transverse incision in the right upper quadrant of the abdomen (RUQ). Other approaches described include upper midline laparotomy, oblique incision and, a circum-umbilical (UMB) incision (**Sitsen et al., 1998**).

With recent advances in minimally invasive techniques, laparoscopic pyloromyotomy (LPM) has emerged as a novel approach. The first LPM was performed in France in 1990 (**Alain et al., 1991**).

The laparoscopic technique has got the potential benefits of shorter hospital stay, early tolerance of full feedings, less postoperative pain and minimal postoperative complications (**Caceres and Liu, 2003**).

According to Pandya and Heiss, current recommendations include ultrasonography for diagnosis, preoperative corrections of electrolytes and use of minimally invasive treatment techniques (**Pandya and Heiss, 2012**).

AIM OF THE WORK

This essay aimed to discuss IHPS in the following points:

- Historical background and etiology
- Anatomy and embryology relevant for IHPS
- Pathophysiology of IHPS
- Clinical picture, Investigations and differential diagnosis
- Treatment (Medical therapy, preoperative preparation, different modalities of surgical treatment and details, postoperative care and Prognosis).