



PEDIATRIC SURGERY Update ©

Vol. 49 No. 03 SEPTEMBER 2017

Schatzki Ring

Schatzki ring (SR) is a thin diaphragm type of circumferential fold of mucosa that protrude into the lumen of the distal esophagus. It usually measures between one and 2 mm in thickness and is located in the gastroesophageal squamocolumnar junction. Schatzki ring is a very rare condition identified in the pediatric population. SR are found in 6-14% of routine barium esophagograms. Though SR are asymptomatic, they are considered to be the most common cause of episodic dysphagia for solids and food impaction in adults. SR pathogenesis has been associated with congenital, anatomical (hiatal hernia), and inflammatory conditions such as that associated with gastroesophageal reflux or eosinophilic esophagitis. Because SR is located at the squamous columnar junction, the most widely accepted theory of pathogenesis is that it is part of the spectrum of chronic mucosal inflammation resulting from acid reflux which is not always found to be true. The level of esophagitis and positive pH monitoring found in patients with SR is less than 50% of the time. Patients with SR have a normal lower esophageal sphincter pressure. It is suggested that there are two types of SR depending on esophagoscopy findings: a more common intermittent type and a less common fixed one. The intermittent type is produced by mucosal plication and is the type seen associated with eosinophilic esophagitis, while patients with peptic esophagitis may have the fixed type. Most cases of SR are males and the most common clinical presentation is dysphagia and food impaction with a mean duration of four years prior to diagnosis. SC is also associated with hiatal hernia, esophageal web and esophageal diverticula. Diagnosis of SR entail endoscopy with biopsy, esophagogram and manometry studies. Management consist of observation if asymptomatic, proton pump inhibitors if reflux is identified, or esophageal dilatation (balloon or bougie) if fixed, symptomatic and narrow.

References:

- 1- Nurko S, Teitelbaum JE, Husain K, Buonomo C, Fox VL, Antonioli D, Fortunato C, Badizadegan K, Furuta GT: Association of Schatzki ring with eosinophilic esophagitis in children. *J Pediatr Gastroenterol Nutr.* 38(4):436-41, 2004
- 2- Muller M(1), Gockel I, Hedwig P, Eckardt AJ, Kuhr K, Konig J, Eckardt VF: Is the Schatzki ring a unique esophageal entity? *World J Gastroenterol.* 17(23):2838-43, 2011
- 3- Towbin AJ, Diniz LO: Schatzki ring in pediatric and young adult patients. *Pediatr Radiol.* 42(12):1437-40, 2012
- 4- Muller M, Eckardt AJ, Fisseler-Eckhoff A, Haas S, Gockel I, Wehrmann T: Endoscopic findings in patients with Schatzki rings: evidence for an association with eosinophilic esophagitis. *World J Gastroenterol.* 18(47):6960-6, 2012
- 5- Patel B, Han E, Swan K: Richard Schatzki: a familiar ring. *AJR Am J Roentgenol.* 201(5):W678-82, 2013
- 6- Ashraf HH, Palmer J, Dalton HR, Waters C, Luff T, Strugnell M, Murray IA: Can patients determine

Postsurgical Hypoparathyroidism

Hypoparathyroidism (HypoPT) is an uncommon disorder characterized by hypocalcemia and hyperphosphatemia due to insufficient secretion of parathyroid hormone. By far the most common cause of hypoparathyroidism is postsurgical followed by autoimmune disorders, genetic causes, metastatic disease, iron overload or ionizing radiation. Neck surgery for thyroid cancer, goiter (toxic and nontoxic) and hyperparathyroidism is the most common cause of acquired hypoparathyroidism responsible for 75% of all cases. Almost 7% of surgical procedures related to the thyroid or parathyroid gland results in hypoparathyroidism, with 75% being transient and 25% chronic (> 6 months). Acquired HypoPT occurs after removal, irreversible damage or vascular ischemia of the parathyroid glands. Parathyroid hormone enhances renal tubular calcium reabsorption and increases phosphate excretion. Lack of parathyroid hormone is associated with an increase renal calcium excretion and hyperphosphatemia. Morbidity associated with HypoPT includes neuromuscular excitability (tetany), renal insufficiency, kidney stones, posterior subcapsular cataracts, intracerebral calcifications, reduced skeletal remodeling, alteration in mood, depression, bipolar disorders and increase risk of infection due to altered immune response. Risk of cardiovascular disease, fractures, spinal stenosis and malignant disease are not increased in patients with HypoPT. Management of hypoparathyroidism with calcium and active vitamin D causes an increase in serum calcium and relief of classical symptoms of hypocalcemia. The main problem is compliance with calcium and vitamin D long-term ingestion. The intake of large amounts of soft drinks containing high amounts of phosphoric acid reduces calcium absorption efficiency despite high doses of calcium therapy. Overall, mortality is not increased with hypoparathyroidism. Successful living-donor parathyroid allotransplantation for postsurgical HypoPT represents an innovative therapeutic strategy that could provide definitive management in which the disease is refractory to therapy.

References:

- 1- Khan MI, Waguespack SG, Hu MI: Medical management of postsurgical hypoparathyroidism. *Endocr Pract.* 17 Suppl 1:18-25, 2011
- 2- Underbjerg L, Sikjaer T, Mosekilde L, Rejnmark L: Postsurgical hypoparathyroidism--risk of fractures, psychiatric diseases, cancer, cataract, and infections. *J Bone Miner Res.* 29(11):2504-10, 2014
- 3- Clarke BL, Brown EM, Collins MT, et al: Epidemiology and Diagnosis of Hypoparathyroidism. *J Clin Endocrinol Metab.* 101(6):2284-99, 2016
- 4- Agha A, Scherer MN, Moser C, et al: Living-donor parathyroid allotransplantation for therapy-refractory postsurgical persistent hypoparathyroidism in a nontransplant recipient - three year results: a case report. *BMC Surg.* 16(1):51, 2016
- 5- Kakava K, Tournis S, Papadakis G, et al: Postsurgical Hypoparathyroidism: A Systematic Review. *In Vivo.* 30(3):171-9, 2016
- 6- Guarnotta V, Riela S, Massaro M, et al: The Daily Consumption of Cola Can Determine Hypocalcemia: A Case Report of Postsurgical Hypoparathyroidism-Related Hypocalcemia Refractory to Supplemental Therapy with High Doses of Oral Calcium. *Front Endocrinol (Lausanne).* 2017 Jan 26;8:7. doi: 10.3389/fendo.2017.00007. eCollection 2017

Pinpoint

Fluorescent cholangiography (FC) is a technique that can be easily performed with intravenous fluorophore injection and intraoperative near-infrared imaging (NIR) to view its dissemination throughout the biliary system. The pinpoint endoscopic fluorescence imaging system (Novadaq) overlays fluorescent and color images in a synchronous manner enabling the simultaneous visualization of normal color and fluorescent images. This enables the simultaneous viewing of fluorescent images and surgery can be performed watching the anatomy of the biliary system without the need of performing and intraoperative cholangiogram. The advantage is that this system can help discern the anatomy of the biliary system while removing the sick gallbladder specially in cases where there is chronic inflammation or subacute cholecystitis thus avoiding the dreadful complication of bile duct injury. Indocyanine Green (ICG) is injected intravenously at anesthesia induction permitting the cystic duct and common bile duct to be clearly imaged while performing the laparoscopic procedure using the Pinpoint system. Pressing a camera-mounted button Pinpoint can display simultaneous video modes to include conventional white light high definition, fluorescence only, and composite NIR-ICG overlay modes. ICG binds to plasma proteins after IV injection, but it remains in the intravascular space for a few minutes. Bound ICG is taken by the liver and excreted unchanged through the biliary system. ICG injection is well tolerated with very rare serious risk of anaphylaxis. Since it contains iodide, it should be used with caution in patients who are allergic to iodide or iodinated imaging agents. NIR-FC provides sensitive and prolonged identification of biliary anatomy and assessment of functional status. Other applications of NIR-ICG fluorescence includes vascular perfusion assessment of myocutaneous flaps, hollow viscus anastomosis and oncologic procedures.

References:

- 1- Tsutsui N, Yoshida M, Kitajima M, Suzuki Y: Laparoscopic cholecystectomy using the PINPOINT endoscopic fluorescence imaging system with intraoperative fluorescent imaging: A case report. *Int J Surg Case Rep.* 2016;21:129-32.
- 2- Bozzay J, Vicente D, Jessie EM, Rodriguez CJ: Identification of Abnormal Biliary Anatomy Utilizing Real-Time Near-Infrared Cholangiography: A Report of Two Cases. *Case Rep Gastrointest Med.* 2017;2017:8628206. doi: 10.1155/2017/8628206. Epub 2017 Apr 27.
- 3- Watanabe M, Murakami M, Ozawa Y, Yoshizawa S, Matsui N, Aoki T: Intraoperative Identification of Colonic Tumor Sites Using a Near-Infrared Fluorescence Endoscopic Imaging System and Indocyanine Green. *Dig Surg.* 2017 Feb 21. doi: 10.1159/000458450
- 4- Ryu S, Yoshida M, Hironori O, Tsutsui N, Suzuki N, Ito E, Nakajima K, Yanagisawa S, Kitajima M, Suzuki Y: Intraoperative ICG fluorescence contrast imaging of the main artery watershed area in colorectal cancer surgery: Report of a case. *Int J Surg Case Rep.* 2016;26:176-8. doi: 10.1016/j.ijscr.2016.06.009. Epub 2016 Jul 29.
- 5- Kazanowski M, Al Furajii H, Cahill RA: Near-infrared laparoscopic fluorescence for pelvic side wall delta mapping in patients with rectal cancer--'PINPOINT' nodal assessment. *Colorectal Dis. Suppl* 3:32-5, 2015

***Edited by: Humberto Lugo-Vicente, MD, FACS, FAAP**
Professor of Pediatric Surgery, University of Puerto Rico - School of Medicine,
Rio Piedras, Puerto Rico. Director - Pediatric Surgery, San Jorge Childrens

Hospital.

Address: P.O. Box 10426, Caparra Heights Station, San Juan, Puerto Rico USA
00922-0426.

Tel (787)-999-9450 Fax (787)-720-6103 E-mail: *titolugo@coqui.net*

Internet: <http://home.coqui.net/titolugo>

©PSU 1993-2017
ISSN 1089-7739