



Johns Hopkins All Children's Study Examines Factors Affecting Pediatric Thyroidectomy Outcomes

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By Randolph Fillmore



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Pediatric thyroid disease requiring the total removal of the cancerous thyroid gland — a procedure called a “thyroidectomy” — is uncommon; however, the complication rates for children undergoing thyroidectomy are greater than for adults undergoing the same surgical procedure. Complications, such as hematoma, laryngeal nerve damage or surgical site infection may increase the pediatric patient’s length of hospital stay or cause a hospital readmission within 30 days after surgery.

According to Johns Hopkins All Children’s Hospital surgeon [Christopher Snyder, M.D., FACS](#), the risk factors for complications related to a thyroidectomy that might prolong the length of hospital stay and hospital readmission for pediatric patients had not been adequately studied or explained.

“When we see unexplained variability in outcomes, we also see an opportunity to improve outcomes by taking a closer look at the risk factors contributing to those outcomes,” says Snyder, who specializes in [pediatric surgery](#).

Leveraging a national database of pediatric surgeries (the National Surgical Quality Improvement Program — Pediatric [NSQIP-P]), Snyder and colleagues recently completed a study aimed at identifying the risk factors that might influence a prolonged hospital stay or hospital readmission for pediatric patients within 30 days of having a thyroidectomy.

Their study took a broad, retrospective approach and also looked at how risk factors for prolonged length of stay and hospital readmission might be associated with the surgical specialties of those performing thyroidectomies and how well post-operative care resources were used.

Their study, titled “[Risk factors for prolonged hospitalization and readmission after total thyroidectomy on children: Associations with surgical subspecialty](#),” was recently published in *The American Journal of Surgery*.

Studying the Risk Factors

To conduct their study, the researchers used the NSQIP-P, a national database developed by the American College of Surgeons. They looked at the outcomes for patients under the age of 18 who had undergone a thyroidectomy and either had prolonged hospitalization (greater than two days) — or were readmitted to the hospital within 30 days of their surgeries.

The study population consisted of 1,535 pediatric surgical cases of which 1,274 (83%) underwent thyroidectomy and 261 (17%) had a thyroidectomy along with central/limited lymph node dissection.

The researchers also investigated whether the specialty of the surgeon — pediatric general surgery, pediatric otolaryngology and adult general surgery or adult otolaryngology — was associated with risk of prolonged hospital stays and hospital readmission.

“Traditionally, general surgeons and otolaryngologists have performed thyroidectomy in both adult and pediatric patients,” Snyder says. “However, in light of the nuances in the pediatric population, and the risk for complications, there has been a shift toward pediatric-trained surgeons performing the majority of pediatric thyroid operations. Pediatric-trained surgeons now perform the majority of pediatric thyroidectomy cases, but the outcomes based on pediatric surgical subspecialty have not been thoroughly studied.”

The case time period for thyroidectomies the researchers extracted from the database covered those performed from 2015 through 2020. According to Snyder, it was important to begin the study with cases performed in 2015 because that was the year the American Thyroid Association (ATA) published the first management guidelines focused on children with thyroid nodules and thyroid cancer.

“With children, thyroid nodules are more likely to become cancerous than when they appear in adults,” Snyder explains. “When the ATA published those guidelines, they recognized that children with thyroid nodules or thyroid cancer were different than adults with thyroid nodules or thyroid cancer.”

Study Results

The researchers found that of 1,535 patients, 14% had a prolonged hospital stay and 2% had been readmitted to the hospital within 30 days of their surgery. Prolonged hospitalization rates for pediatric otolaryngologists vs. pediatric general surgeons vs. adult general surgery or adult otolaryngologists were 21% vs. 11% vs. 10%, respectively. There was no difference for risk of hospital readmission by subspecialty.

The researchers concluded that a prolonged hospital stay is more likely after pediatric thyroidectomy is performed by pediatric otolaryngologists, as compared to pediatric general surgeons or adult surgeons. While a thyroidectomy may be performed safely by individual subspecialties, collaboration across specialties and a “multidisciplinary” approach to surgery may provide the best outcomes.

Snyder added that the pediatric surgeons at Johns Hopkins All Children’s work closely with [endocrinologists](#).

Being a “Level 1 Children’s Surgery Program”

Recently, the American College of Surgeons (ACS) national Task Force for Children’s Surgical Care, the Children’s Surgery Verification program designated Johns Hopkins All Children’s Hospital as a “[Level 1 Children’s Surgery Center](#).”

That means that Johns Hopkins All Children’s is recognized as having a level of excellence held by fewer than 50 children’s hospitals in the United States based on evidence-based standards of care. The designation makes Johns Hopkins All Children’s Hospital the third children’s hospital in Florida and the only one in the Tampa Bay region to achieve Level 1 verification. It ensures that children facing surgery receive care under a multidisciplinary program with quality improvement and safety processes, data collection, and appropriate patient resources.

“Level 1 verification for children’s surgery tells families and physicians that a center has the expertise, facilities, capabilities, and processes to provide safe, high-quality surgical care to children,” says [Paul Danielson, M.D., FACS](#), chair of the Department of Surgery at Johns Hopkins All Children’s. “The ACS verification program is based on other nationally recognized American College of Surgeons programs that have measurably improved surgical quality and have prevented complications, reduced costs and saved lives.”

As just one example that can support Johns Hopkins All Children’s Hospital having been awarded ACS Level 1 Children’s Surgery Center status, Snyder pointed to the importance of having pediatric-trained surgeons perform thyroidectomies, those who have the surgical experience and expertise necessary for preserving the four nearby parathyroid glands during a thyroidectomy.

“The parathyroid glands are fragile, smaller in children, and may be more difficult to identify during surgery,” Snyder explains. “Inadvertent damage to the parathyroid glands during surgery can have significant and long-lasting negative effects.”

The researchers also concluded: “This study shows that pediatric general surgeons perform the majority of pediatric total thyroidectomy operations in [National Surgical Quality Improvement Program pediatric] hospitals with similar complications, readmissions and postoperative length of stay compared to adult endocrine surgeons.”

They also noted that the importance of a multidisciplinary approach is widely supported and that some pediatric thyroid surgical groups have adopted a dual-surgeon approach, with two surgeons participating in the surgical case. Other centers have formed partnerships between pediatric surgeons and high-volume adult endocrine surgeons and used a multidisciplinary team approach, including members from different surgical subspecialties to coordinate and oversee the entirety of the patient’s care.

“Regardless of the surgical arrangement, establishing centralized, multidisciplinary care for pediatric patients with thyroid disease has shown favorable outcomes comparable to those achieved by high volume adult centers,” concluded the researchers.