



## Invited Commentary

## Shedding new light on old complications: CESQIP and understanding post-thyroidectomy outcomes



Thyroidectomy was once a procedure with a mortality rate of 20–50%<sup>1</sup> and unacceptably high rates of hypocalcemia and laryngeal paralysis. Today, thyroidectomy can safely be performed as an outpatient.<sup>2</sup> That being said, complications, although thankfully low, do happen, and until the advent of large national outcomes databases such as the American College of Surgeons National Surgical Quality Improvement Program (NSQIP), reports of complications and risk factors for them were often left to single institution retrospective reviews. NSQIP provided thyroid surgeons with data on 30-day complications common to all surgical procedures such as urinary tract infections (UTI), surgical site infections (SSI), pneumonia, etc., but until the release of the thyroidectomy participant use file in 2016 did not report on procedure-specific complications such as recurrent laryngeal nerve injury, hypocalcemia, or hematoma.

Enter CESQIP – the Collaborative Endocrine Surgery Quality Improvement Program—which was formed in 2012 by surgeons from the American Association of Endocrine Surgeons (AAES) with the goal of collecting additional endocrine surgery-specific variables to aid in tracking outcomes. The current study by Taye et al. is among the first to report outcomes from the CESQIP database and examines 30-day emergency room (ED) visits and hospital readmissions in patients undergoing any type of thyroid surgery from September 2013–September 2016 identifying associated risk factors.<sup>3</sup> They found rates of ED visits to be 3.4%, with the top two complaints being those “unrelated to thyroidectomy” and hypocalcemia, representing 50.6% and 21.9% of all ED visits, respectively. Hospital readmissions were also low at 2.3%, with the leading indications again being hypocalcemia (36.4%) and those unrelated to thyroidectomy (23.1%). Multivariable logistic regression showed BMI >40 kg/m<sup>2</sup> was independently associated with increased odds of both ED visits and hospital readmissions. Surgical duration >3 hours and intraoperative transection of the recurrent laryngeal nerve were additional independent risk factors for hospital readmission.

The study by Taye et al. has similar findings to previously published reviews of readmissions after thyroid surgery demonstrating similarly low rates of readmission ranging from 1.6 to 4.7%.<sup>2,4–8</sup> Using NSQIP, patient comorbidities and postoperative complications have been associated with an increased risk of readmission,<sup>4,8</sup> and in a study using the National Inpatient Sample (NIS), high risk patients and those with postoperative hypocalcemia were also found to be at increased risk.<sup>5</sup> Additional research has found that, consistent with this study, hypocalcemia is often the most common reason for presentation.<sup>5–7,9</sup> What this study does improve on compared to previous large database reviews, is in

the evaluation of ED visits without hospital readmission, which is unavailable in NSQIP and the NIS.

Like any large administrative database, there are several limitations to the use of CESQIP, which the authors note. First, unlike NSQIP, not all CESQIP institutions have dedicated data entry personnel, making some data self-reported. This may result in underreporting of true complication rates. Second, more granularity in the variables collected may improve the conclusions able to be drawn from CESQIP data; which are not much different than the existing literature despite coming from an endocrine surgeon-driven database. Perhaps inclusion of factors in future versions of CESQIP that may contribute to hypocalcemia such as indication for surgery, gland size, intraoperative identification of parathyroid glands, postoperative PTH/Ca bloodwork, or discharge use of calcium or vitamin D replacement would further delineate endocrine surgery-specific modifiable risk factors for ED visit or readmission. Additionally, the large percentage of patients seen after surgery due to “other complaints” could be further parsed out to determine why patients really come to the ED if not for thyroidectomy-specific reasons. Finally, the use of CESQIP is likely limited to those at high volume endocrine surgery centers, so outcomes of CESQIP studies may be different to those in the Thyroid-specific NSQIP dataset due to different surgeon volumes, patient mix, and available resources.

Readmissions and ED visits after thyroid surgery are rare, but national database studies such as that by Taye et al. can help identify modifiable risk factors for further in-depth study as to how these outcomes can be prevented. CESQIP is a welcome addition to the growing list of national databases, as it was developed by endocrine surgeons for endocrine surgeons, and has the potential to provide valuable data to inform us how to provide the best outcomes for patients.

## Declaration of competing interest

Drs. Beninato and Laird have no conflicts of interests to disclose.

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8 May 2020