

Robotic Thyroidectomy Costs More But Is Not Better Than Standard Cervical Thyroidectomy

Cabot JC, et al.

decrease from 185 to 111 minutes, and the operative time for TAR would have to fall from 166 to 68 minutes to reach cost equivalence with the SC group.

Conclusions

TAE and TAR thyroidectomy were more expensive than SC thyroidectomy, chiefly because of the higher

equipment depreciation costs and substantially longer operating times. The flat reimbursement schedule in the United States is a disincentive to implementing the TAE or TAR approaches. It is unlikely that TAE and TAR thyroidectomy will become common in the United States, but they may survive as niche operations.

ANALYSIS AND COMMENTARY ● ● ● ● ●

Until recently, there was considerable enthusiasm for robot-assisted remote-access thyroidectomy. Many centers across the United States developed programs for remote-access thyroidectomy and attempted to reproduce the Korean experience with this new technique. However, enthusiasm began to wane in October 2011 when Intuitive Surgical, the manufacturer of the da Vinci surgical robot, indicated that it would stop supporting robotic thyroid surgery. In addition, controversy exists in the literature as to which of the remote-access approaches is superior, and even whether remote-access thyroidectomy is superior to conventional thyroidectomy. Lee and colleagues from Yonsei University have published that the TAR approach is superior to the TAE approach in terms of shorter operating time, greater lymph-node retrieval, and a shorter learning curve (1). In contrast, other authors from Korea have found the TAR approach to be longer, more costly, and associated with more drainage than the TAE approach (2). Another remote-access technique, the robotic facelift thyroidectomy, has also been compared with the TAR and was found to have a shorter operating time and was associated with a greater chance of being managed in the outpatient setting (3).

Few studies, however, have compared robotic with conventional techniques for thyroidectomy. In this model developed by Cabot and colleagues, the remote-access approaches were found to be consid-

erably more costly than the conventional approach. This is not surprising, considering the costs of robotic and laparoscopic devices, consumables unique to the remote-access techniques, and increased operating time. Broome and colleagues came to the same conclusion in a similar study comparing the costs of conventional and robotic thyroidectomy; they found the latter to be approximately twice as costly (4). Considering the fact that hospitals and physicians in the United States are not reimbursed at a higher rate by third-party payers for these procedures, those increased costs of the operation could substantially burden the health care delivery environment in which they are performed. In addition to these cost concerns, other researchers in the United States have identified issues with remote-access thyroidectomy that have led them to abandon the procedure. Landry and colleagues from the MD Anderson Cancer Center found TAR to be associated with a longer operating time, a potential for brachial plexus injury, numbness in the anterior chest wall, and greater blood loss. They called for a prospective study to evaluate cost, quality of life, and patient-reported satisfaction (5). In addition, the senior author of that manuscript has recently publicly declared that they have abandoned robot-assisted transaxillary surgery (6). In her opinion, the cosmetic benefit of robotic transaxillary thyroidectomy does not offset the risks and liability of performing an operation that takes greater resources, might have some additional complications, and is not supported by the robotic equipment manufacturer.

continued on next page

Robotic Thyroidectomy Costs More But Is Not Better Than Standard Cervical Thyroidectomy

Cabot JC, et al.

In Korea, where much of the robotic thyroidectomy literature and enthusiasm originates, reimbursement is apparently twice the standard amount for endoscopic thyroidectomy and four times the standard amount for robotic thyroidectomy (7). In contrast, in the United States there are no such incentives for TAE or TAR; reimbursement is equal for thyroidectomy regardless of surgical approach. The higher cost of the procedure is therefore borne by the health care facility instead of the third-party payer. Furthermore, because of declining reimbursements and shrinking

health care budgets, there is currently much interest in the United States and abroad in comparative-effectiveness studies. Increased costs should be associated with a substantial improvement in outcome as compared with the standard approach in order for these remote-access approaches to be considered cost-effective. This study and others appropriately question whether the increased costs of remote-access surgery are warranted, and suggest that these approaches might be cost-prohibitive.

References

1. Lee J, Lee JH, Nah KY, Soh EY, Chung WY. Comparison of endoscopic and robotic thyroidectomy. *Ann Surg Oncol* 2011;18:1439-46. Epub December 24, 2010.
2. Yoo H, Chae BJ, Park HS, et al. Comparison of surgical outcomes between endoscopic and robotic thyroidectomy. *J Surg Oncol* 2012;105:705-8. Epub September 27, 2011.
3. Terris DJ, Singer MC. Qualitative and quantitative differences between 2 robotic thyroidectomy techniques. *Otolaryngol Head Neck Surg* 2012;147:20-5. Epub February 27, 2012.
4. Broome JT, Pomeroy S, Solorzano CC. Expense of robotic thyroidectomy: a cost analysis at a single institution. *Arch Surg* 2012;August 20:1-5.
5. Landry CS, Grubbs EG, Warneke CL, et al. Robot-assisted transaxillary thyroid surgery in the United States: is it comparable to open thyroid lobectomy? *Ann Surg Oncol* 2012;19:1269-74. Epub November 8, 2011.
6. Perrier ND. Why I have abandoned robot-assisted transaxillary thyroid surgery. *Surgery* 2012;152:1025-6.
7. Duh QY. Robot-assisted endoscopic thyroidectomy: has the time come to abandon neck incisions? *Ann Surg* 2011;253:1067-8.