

The Improved Quality Process after Implementation of the Hemithyroidectomy Care Map

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Objective: To report the improved quality process in service care of the patients undergoing hemithyroidectomy and the results of the care map implementation.

Material and Method: Descriptive analysis and retrospective chart reviews were performed in the patients who underwent hemithyroidectomy in the Department of Otorhinolaryngology, Faculty of Medicine Siriraj Hospital before and after the care map implementation between January 2004 and December 2006.

Results: Hemithyroidectomy care map has been created with good cooperation of all members of our department in January 2005. Two hundred seventy nine patients, including 246 females (88%) and 33 males (12%) participated in this study. The care map was used in all patients. Hospital stay was reduced from five to eight days to less than four days in 93% of the patients. The estimated expenses of 97% of the patients differed from the true expense at less than 20%. Complications were minimized to the acceptable level by close supervision of the attending staffs. Incidence of vocal cord paralysis was reduced from 8.7% before the care map implementation to 2.4% and 2.3% in the first and second years. Hematoma was observed in three cases within 24 hours postoperatively and could not be prevented by drain insertion. Only minimal content was found in the drain after 48 hours.

Conclusion: The improved quality process in hemithyroidectomy care received good cooperation from all members in our department. Effective resource utilization was achieved with maximal patients' benefit and satisfaction. Close supervision by attending staffs, meticulous surgical techniques, and adequate bleeding control are the keys of effective clinical care. Hospital stay is possibly reduced to one to two days by good pre-anesthetic care before admission and by avoiding or using drain only in selected cases for six to 48 hours.

Keywords: Hemithyroidectomy, Care map, Complication, Drain, Hospital stay, Expenses

J Med Assoc Thai 2013; 96 (10): 1338-43

Full text. e-Journal: <http://jmat.mat.or.th>

Hemithyroidectomy is a common procedure in otorhinolaryngological practice. There have been more than 100 cases per year operated in the Department of Otorhinolaryngology, Faculty of Medicine Siriraj Hospital, Mahidol University in the past three years. Guidelines of patient care vary depending on surgeons' preference. The length of hospital stay is usually five to eight days. Many unnecessary medications including antibiotics are usually prescribed. The estimated total expense of the admission cannot be calculated due to variation of patient care. According to the concept of resource utilization, the patient care team for hemithyroidectomy

was set up in October 2004. The mission of our team was to propose a reasonable and cost effective hemithyroidectomy care to maximize patients' benefit.

To compromise with surgeons who were accustomed to their own pattern of patient care, traditional styles and new evidence-based data were combined to create a standard care map of hemithyroidectomy in our department. The authors reported the process to establish the hemithyroidectomy care map and the results of the implementation.

Material and Method

The hemithyroidectomy patient care team was set up in October 2004 and was assigned to improve the quality of patient care and to achieve the effective resource utilization. Our team had three attending staffs and four nurses who were representative of outpatient and inpatient unit and the operating room. Our team retrospectively explored the service care and clinical

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pathway of the hemithyroidectomy performed in the last 20 cases. Patients were interviewed about service satisfaction, their suggestions for improvement and what they expected from the hospital. A search of the literatures about thyroidectomy care was then performed. In order to make the procedure uniform, a clinical and service pathway, as a care map, for hemithyroidectomy was designed and revised until all members of our team finally agreed and approved it. Indicators were created corresponding to the aim of the improved quality process. The hemithyroidectomy care map and indicators were presented to the clinical lead team for any comments or suggestions. To simplify our care map, the authors initially focused on uncomplicated cases of hemithyroidectomy. The care map and indicators were then revised to get the approval from the clinical lead team and launched to routinely use in patients who underwent uncomplicated hemithyroidectomy starting in January 2005. To show the effectiveness of the care map, a retrospective chart review of patients who underwent hemithyroidectomy at our department was performed before and after the care map implementation between January 2004 and December 2006. The present study was approved by Siriraj Institutional Review Board (SIRB). Data collection included demographic data, length of hospital stay, amount of drainage, complications, estimated and true expenses. The authors tried to collect the data from every patient who met eligible criteria without excluding any case. Unfortunately, some patients' files were missing for unknown reasons.

Results

The retrospective chart review of initial 20 patients showed diversities of clinical care e.g. the duration of retaining the drain, the length of hospital stay after drain removal and antibiotic prescription. The patients wanted to know the exact duration of their hospital stay and the estimated expense. They were admitted for five to eight days. Drain was routinely placed for two to six days before removal.

A care map of a 4-day hospital stay is shown in the Fig. 1. The patients were admitted in the hospital one day before the procedure for pre-operative anesthetic care. With adequate bleeding control, suction drain was routinely inserted into the surgical area and the amount of content was recorded daily. The authors recommended removing it on the second or the third postoperative day. Postoperative medication included mucolytic drug, analgesic and anti-vomiting drugs as needed without antibiotics. If the drain was removed

on the second postoperative day, the patient was then observed for another day. Every patient was discharged on the third postoperative day for a total of 4-day hospital stay. Patients' estimated expenses were calculated as estimation as shown in Table 1.

To minimize the complications in hemithyroidectomy, especially vocal cord paralysis, residents were directly supervised by attending staffs while performing the procedure. Attending staffs scrubbed in and assisted residents in the first few cases until they were convinced that residents could operate on their own with only remote supervision.

To assess the success of our team's activity, the indicators were created as follows:

1. Care map should be used in more than 80% of the patients undergoing hemithyroidectomy
2. The complication rate, including vocal cord paralysis and hematoma, should be less than 5%.
3. The estimated expenses of more than 80% of the patients should not differ from the true expenses by more than 20%.
4. The length of hospital stay of more than 80% of the patients should be less than four days.

To assess the effectiveness of the care map implementation, a retrospective chart review was performed in the patients who underwent hemithyroidectomy between January 2004 and December 2006 in Department of Otorhinolaryngology, Faculty of Medicine Siriraj Hospital, Mahidol University. Two hundred seventy nine patients including 246 female (88%) and 33 male (12%) participated in this study. The authors divided the patients into three groups, group A (106 cases) was the pre-care map group (January 2004-December 2004), group B (84 cases) was the first year post-care map group (January 2005- December 2005), and group C (89 cases) was the second year post-care map group (January 2006- December 2006). The length of stay and complications could be collected in all groups. However, the rate of care map use and the precision of the estimated expense were collected only in post care-map group. Indicators of the care map in each group are shown in Table 2.

The mean of hospital stay was reduced from 5.1 days in the pre-care map group to 4.2 days in both first and second year post-care map group. The mean of drain retaining was three days in pre-care map group and was reduced to 2.7 days in both first and second year post-care map group. In patients who retained the drain more than two days, the amount of content, which was all serum, increased minimally and only five cases

(2.3%) had drain content more than 20 ml on the third day. No adverse events were reported after removal of the drain. Wound swelling was reported in

three cases and subsided spontaneously. No hematoma or seroma was reported. Immediate vocal cord paralysis was found in 10 cases (8.7%) in the pre-care map group

Name..... HN..... Ward..... Attending physician..... Dx..... Operation.....									
Admission date..... Discharge date.....									
day	Aspect of care	assess/consult	specimen/test	medication	treatment	nutrition	safety/activity	psychosocial	health education
preadmission		<input type="checkbox"/> vital sign <input type="checkbox"/> underlying disease <input type="checkbox"/> consultation <input type="checkbox"/> estimated expense <input type="checkbox"/> previous menstruation <input type="checkbox"/> consent form <input type="checkbox"/> information sheet <input type="checkbox"/> expense claim	<input type="checkbox"/> CBC, UA, <input type="checkbox"/> Anti HIV <input type="checkbox"/> CXR <input type="checkbox"/> EKG <input type="checkbox"/> Other investigation <input type="checkbox"/> FNA result	<input type="checkbox"/> anticoagulant if used quit on <input type="checkbox"/> other drugs					
Day 1 (admission)		<input type="checkbox"/> Completion of consent form <input type="checkbox"/> expense claim <input type="checkbox"/> history taking <input type="checkbox"/> physical examination <input type="checkbox"/> menstruation period	<input checked="" type="checkbox"/> completion of necessary lab	<input type="checkbox"/> pre-anesthetic medication <input type="checkbox"/> anticoagulant quit > 7 days <input type="checkbox"/> other medication	<input type="checkbox"/> preparation skin of the neck and chest	<input type="checkbox"/> NPO 6 hours before procedure time	<input type="checkbox"/> normal activity <input type="checkbox"/> neck exercise	<input type="checkbox"/> psychological assessment <input type="checkbox"/> making familiarity	<input type="checkbox"/> pre and postop care orientation and education <input type="checkbox"/> breathing exercise <input type="checkbox"/> effective cough
Day 2 (Day of surgery)		<input type="checkbox"/> vital sign <input type="checkbox"/> patient identification <input checked="" type="checkbox"/> immediate postop care <input type="checkbox"/> vital sign <input type="checkbox"/> pain <input type="checkbox"/> bleeding <input type="checkbox"/> nausea/vomiting <input type="checkbox"/> urination <input type="checkbox"/> working vac drain	<input checked="" type="checkbox"/> specimen for pathological study	<input type="checkbox"/> pre-anesthetic medication <input checked="" type="checkbox"/> immediate postop care <input type="checkbox"/> pain medication <input type="checkbox"/> other medication <input type="checkbox"/> IV fluid	<input type="checkbox"/> vac drainml	<input type="checkbox"/> soft diet	<input type="checkbox"/> head elevation	<input type="checkbox"/> visiting <input type="checkbox"/> talking <input type="checkbox"/> encouraging	<input checked="" type="checkbox"/> immediate postop care <input type="checkbox"/> no pulling out all catheter <input type="checkbox"/> no permission to ambulate alone <input type="checkbox"/> breathing exercise <input type="checkbox"/> effective cough
Day 3 (postop D1)		<input type="checkbox"/> vital sign <input type="checkbox"/> pain assessment <input type="checkbox"/> wound care <input type="checkbox"/> vocal cord function <input type="checkbox"/> general condition			<input type="checkbox"/> vac drainml <input type="checkbox"/> wound care	<input type="checkbox"/> regular diet	<input type="checkbox"/> head elevation <input type="checkbox"/> ambulation <input type="checkbox"/> neck exercise	<input type="checkbox"/> visiting <input type="checkbox"/> talking <input type="checkbox"/> encouraging	<input type="checkbox"/> breathing exercise <input type="checkbox"/> effective cough
Day 4 (postop D2)		<input type="checkbox"/> vital sign <input type="checkbox"/> pain assessment <input type="checkbox"/> wound care <input type="checkbox"/> vocal cord function <input type="checkbox"/> general condition			<input type="checkbox"/> vac drainml <input type="checkbox"/> wound care <input type="checkbox"/> removal of vac drain	<input type="checkbox"/> regular diet	<input type="checkbox"/> ambulation <input type="checkbox"/> neck exercise	<input type="checkbox"/> visiting <input type="checkbox"/> talking <input type="checkbox"/> encouraging	<input type="checkbox"/> breathing exercise <input type="checkbox"/> effective cough
Day 5 (postop D3)		<input type="checkbox"/> vital sign <input type="checkbox"/> pain assessment <input type="checkbox"/> wound care <input type="checkbox"/> vocal cord function <input type="checkbox"/> general condition			<input type="checkbox"/> vac drainml <input type="checkbox"/> wound care <input type="checkbox"/> removal of vac drain	<input type="checkbox"/> regular diet	<input type="checkbox"/> ambulation <input type="checkbox"/> neck exercise	<input type="checkbox"/> visiting <input type="checkbox"/> talking <input type="checkbox"/> encouraging	<input type="checkbox"/> advise wound care <input type="checkbox"/> appointment for follow up

1. Every box has to be checked
 Physician task Nurse task

2. Note should be taken if there are reasons to not complete any part of the care map

3. If the hospital stay is more than 4 days
 The reason for extended admission.....
 Total hospital stay..... days

Expense summary	
Medication	baht
Anesthetic expense.....	baht
Pathological study.....	baht
Total expense.....	baht
Estimated expense.....	baht
Difference.....	%

Fig. 1 The hemithyroidectomy care map.

Table 1. Estimated expense of hemithyroidectomy

Expense categories (Baht)	Room type			
	Supreme private	Private	Partitioned private	Ordinary
Room	10,000 (2,500/day)	7,200 (1,800/day)	4,000 (1,000/day)	1,200 (300/day)
Procedure	3,500	3,500	3,500	3,500
Anaesthesia (3 hours)	5,000	5,000	5,000	5,000
Recovery room	500	500	500	500
Nursing service	1,200 (300/day)	1,200 (300/day)	1,200 (300/day)	1,200 (300/day)
Wound care	150	150	150	150
Pathological study	1,000	1,000	1,000	1,000
Medication when discharged	500	500	500	500
Total	21,850	19,050	15,800	13,050

Table 2. Indicators of the care map

Indicators	Groups			
	Group A (2004)	Group B (2005)	Group C (2006)	
Hospital stay <4 days	86 (81.1%)	77 (91.7%)	84 (94.4%)	
Complications	10 (8.7%)	2 (2.4%)	2 (2.3%)	
Care map use		84 (100%)	89 (100%)	
Precision of estimated expense		80 (95.2%)	88 (99.9%)	
Total number of the patients (percentage)	106 (100%)	84 (100%)	89 (100%)	279 (100%)

compared with only two cases each year (2.4% and 2.3%) in the first and second year after care map implementation.

Discussion

The care map of hemithyroidectomy has been implemented for more than three years in our department. Twenty-three attending staffs were familiar with the traditional pattern of hemithyroidectomy care. Cooperation of all members of our department was very essential to carry on the new hemithyroidectomy care map. Our concept was to improve the quality care of patients who underwent hemithyroidectomy, maximize patients' benefit, and make all members of the care team comfortable with the new care map. The authors used evidence-based data to improve the new care map and avoided too much or too fast change from traditional pattern. The authors encouraged all members of the department, including attending staff, residents, nurses, and other medical personnel to get involved in the development of the new care map. The preliminary new care map was proposed to all members of the department for criticism. Finally, the hemithyroidectomy care map was launched after getting the approval from all members. The new care map was then used in all of our patients. Effective resource utilization was achieved by reducing the hospital stay to four days and avoiding unnecessary postoperative medication. Complications were minimized to the acceptable level as indicated in the literature⁽¹⁾. Vocal cord paralysis was observed in 8.7% of the patients during the pre-care map period and its incidence was reduced to 2.4% and 2.3% in first and second post-care map period, respectively. Our findings were in agreement with previous reports of two to 2.9% of vocal cord paralysis in other institutions⁽¹⁻⁴⁾. Meticulous surgical technique with close supervision of our attending staffs reduced the incidence of recurrent laryngeal nerve injury. All patients were also better satisfied with more accurate

information e.g., estimated expenses, length of hospital stay.

Although drain can theoretically prevent blood and serum collection at the surgical site, it can lead to bleeding and/or lymphatic leakage by direct irritation and opening of the vascular and lymphatic vessels from negative sucking pressure. Many reports confirmed this disadvantage of drain and suggest using it in only selected cases and for the shortest period⁽⁵⁻¹³⁾. Shaha and Jaffe⁽¹⁴⁾ used the drain in patients with a large dead space, large substernal goiter and in patients who underwent subtotal thyroidectomy for either large, multinodular goiter or for Graves' disease. Some surgeons may object that it is difficult to decide which case needs drain, especially in a teaching hospital with residency training. However, residents in training under close supervision and attending staffs performed thyroidectomy with a comparable complication rates^(15,16). Placing the drain is not the prevention of hematoma or seroma and cannot replace meticulous surgical technique with adequate bleeding control. The incidence of hematoma was reported at one to 1.6% and usually occurred within six hours postoperatively^(1,2,17,18). In our series, collection from the drain was minimal after the second postoperative day. The content in the catheter was mostly serum, not active bleeding, after the first postoperative day. If drain is necessary, it should therefore be retained for only six to 48 hours to prevent hematoma. Drain may be removed as early as six hours postoperatively and should not be kept for more than 48 hours postoperatively since there was no additional benefit after that. Postoperative serum can be absorbed spontaneously. Early removal of the drain can avoid the irritation and sucking pressure that could lead to hematoma and serum collection. Since our findings did not show any adverse event after drain removal, observation in the hospital after that was then unnecessary.

After successful implementation of hemithyroidectomy care map for three years, we have

further improved our care map to maximize resource utilization by reducing the hospital stay. With the good cooperation of the anesthesiologist, pre-operative admission may be unnecessary in uncomplicated cases. Meticulous surgical techniques and adequate bleeding control are essential. Resident should be continuously supervised by attending staff during the procedure. Drain is used only in selected case, depending on the surgeon's decision and removed on the first or second postoperative day. The patients can be discharged from the hospital on the first postoperative day or immediately after drain removal. Hospital stay of patients undergoing uncomplicated hemithyroidectomy can be reduced from four days (previous care map) to one to two days. Hopefully, hemithyroidectomy could become an ambulatory procedure in the future.

Conclusion

Care map implementation dramatically improves the quality of patient care with effective resource utilization. The attending staffs' supervision, meticulous surgical techniques, and adequate bleeding control are the key of effective clinical care. Drain can be avoided, but, if really needed, it should be retained for a shortest period (6-48 hours). Early discharge with one to two days hospital stay is possible if there is good cooperation among anesthesiologists, surgeon, and patients.

Acknowledgement

The authors wish to thank all patients and medical personnel who had participated in this study.

Potential conflicts of interest

None.

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กระบวนการพัฒนาคุณภาพที่ดีขึ้นหลังจากการปฏิบัติตามแผนการดูแลผู้ป่วยที่ได้รับการผ่าตัดไทรอยด์ครึ่งซีก

วีระชัย ตันตินิกร, กัลยา จิตตะ, สุปรียา เพชรรักษ์, ปารยะ อาสนะเสน

วัตถุประสงค์: เพื่อรายงานกระบวนการพัฒนาคุณภาพในการดูแลผู้ป่วยที่ได้รับการผ่าตัดไทรอยด์ครึ่งซีก และผลลัพธ์ของการนำแผนการดูแลผู้ป่วยไปปฏิบัติจริง

วัสดุและวิธีการ: การวิเคราะห์เชิงบรรยายและสอบถามย้อนหลังในกลุ่มผู้ป่วยที่ได้รับการผ่าตัดไทรอยด์ครึ่งซีก ณ ภาควิชาโสต นาสิก ลาริงซ์วิทยา คณะแพทยศาสตร์ศิริราชพยาบาล ในช่วงก่อนและหลังการใช้แผนการดูแลผู้ป่วย ระหว่างเดือนมกราคม พ.ศ. 2547 ถึง เดือนธันวาคม พ.ศ. 2549

ผลการศึกษา: แผนการดูแลผู้ป่วยที่ได้รับการผ่าตัดไทรอยด์ครึ่งซีกได้รับความร่วมมือเป็นอย่างดีจากสมาชิกในภาควิชา ตั้งแต่เริ่มใช้เมื่อเดือนมกราคม พ.ศ. 2548 โดยมีผู้ป่วยที่ทำการศึกษาทั้งหมดจำนวน 279 ราย ประกอบด้วย หญิง 246 ราย คิดเป็นร้อยละ 88 และชาย 33 ราย คิดเป็นร้อยละ 12 และได้มีการใช้แผนการดูแลผู้ป่วยนี้ทุกราย ระยะเวลาอนโรงพยาบาลลดลงจากเดิม 5-8 วัน เหลือไม่เกิน 4 วัน ในร้อยละ 93 ของผู้ป่วย ร้อยละ 97 ของผู้ป่วย ทราบค่าใช้จ่ายโดยประมาณเบื้องต้นโดยมีค่าแตกต่างเมื่อเปรียบเทียบกับค่าใช้จ่ายจริงไม่เกินร้อยละ 20 การดูแลควบคุมการผ่าตัดอย่างใกล้ชิดจากอาจารย์แพทย์เป็นผลให้การผ่าตัดมีภาวะแทรกซ้อนน้อยมาก อยู่ในระดับที่ยอมรับได้ ภาวะสายเสียงเป็นอัมพาตลดลงจากร้อยละ 8.7 ในช่วงก่อนใช้แผนการดูแลเหลือร้อยละ 2.4 และ 2.3 หลังใช้แผนการดูแล 1 และ 2 ปี ตามลำดับ มีรายงานการเกิดก้อนเลือดออกในแผลผ่าตัดภายใน 24 ชั่วโมงหลังผ่าตัด ในผู้ป่วย 3 ราย การใส่สายระบายแผลผ่าตัดไม่สามารถป้องกันการเกิดก้อนเลือดออกในแผลผ่าตัดได้ นอกจากนี้ยังพบว่า มีการเพิ่มขึ้นของสารน้ำในสายระบายแผลผ่าตัดหลัง 48 ชั่วโมงไปแล้วน้อยมาก

สรุป: กระบวนการพัฒนาคุณภาพในการดูแลผู้ป่วยที่ได้รับการผ่าตัดไทรอยด์ครึ่งซีกได้รับความร่วมมือจากสมาชิกในภาควิชาเป็นอย่างดี การใช้ทรัพยากรทำได้อย่างคุ้มค่า และผู้ป่วยได้รับประโยชน์และมีความพึงพอใจมาก การดูแลควบคุมการผ่าตัดอย่างใกล้ชิดจากอาจารย์แพทย์, เทคนิคการผ่าตัดที่ถูกต้อง และการห้ามเลือดให้หยุด เป็นกุญแจสำคัญของการดูแลผู้ป่วยกลุ่มนี้ การเตรียมผู้ป่วยให้พร้อมสำหรับการดมยาสลบตั้งแต่ก่อนรับผู้ป่วยไว้ในโรงพยาบาล และการหลีกเลี่ยงการคาสาสายระบาย หรือ ใช้สายระบายเฉพาะผู้ป่วยบางราย และคาไว้เพียง 6-48 ชั่วโมง สามารถลดระยะเวลาการนอนโรงพยาบาลได้จนเหลือเพียง 1-2 วันเท่านั้น
