Poster 399

Effect of early rehabilitation after transaxillary robot-assisted thyroidectomy in patients with thyroid cancer

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Introduction

- ***Why Robot Surgery?*** Robot-assisted thyroidectomy in patients with thyroid cancer provides cosmetic advantage over conventional surgery by leaving minimal scars, and is also reported to be excellent in preserving the parathyroid gland and nerves.
- ***Problem*** Transaxillary, axillo-breast, and retroauricular approaches have been reported so far. During transaxillary approach, an incision is made in the axillary region, and the muscle layer of the pectoralis and the overlying dermis are separated and retracted for about 2 hours of operation time. Therefore, mechanical damage of the dermis and muscular layers is inevitable, which potentially leads to postoperative pain and reduced range of motion (ROM) of the ipsilateral shoulder joint.
- ***Limitation in Current Management*** To facilitate early functional recovery, application of ice pack and stretching exercise has been proposed. However, due to severe postoperative pain, patients often find it difficult to actively stretch their shoulder and pectoral muscles.
- ***Purpose*** This study aims to investigate the functional effects of providing early education and physical therapy to the patients following transaxillary robot-assisted thyroidectomy.

Material and Methods

- ***Study design***
  - Prospective case-control study
  - Single tertiary hospital (Gangnam Severance Hospital, Republic of Korea)
  - Participant recruitment: Feb. 2023 – Jan. 2024
- ***Participants***
  1) Inclusion criteria: patients diagnosed with thyroid cancer underwent robotic surgery and referred for early rehabilitation
  2) Exclusion criteria: who did not receive the rehabilitation program
- ***Intervention***
  - POD 1 08:00-09:00: education of the patient and caregiver by a physiatrist
  - POD 1 14:00-16:00: physical therapy and education by a physical therapist
- ***Primary and secondary outcomes***
  1) **The pain score (numeric rating scale, NRS)**
  2) **Functional**
     - Shoulder range of motion: flexion and abduction
     - Functional performance: head-up-tilt, supine-to-sit

Table 2. Early rehabilitation program after robot-assisted thyroidectomy

Service day	Program	Service provider
POD0	**I. Patient and caregiver education** 1. Body perception: pain and function 2. Importance and method of ice bag apply 3. Desensitization technique applying on the peri-surgical site 4. Gentle stretching of the ipsilateral shoulder joint 5. Gentle massage of the bilateral sternocleidomastoid muscle	Physiatrist
POD1	**II. Physical therapy and education** 1. Breathing exercise and core setting 2. Cryotherapy using a vapocoolant spray on the pectoral and anterolateral neck area 3. Deep neck muscle activation 4. Passive range of motion exercise of the neck 5. Education of neck muscle stretching exercise 6. Mobilization of the pectoral muscle layers 7. Passive range of motion exercise of the shoulder joint 8. Education of shoulder joint stretching exercise	Physical therapist

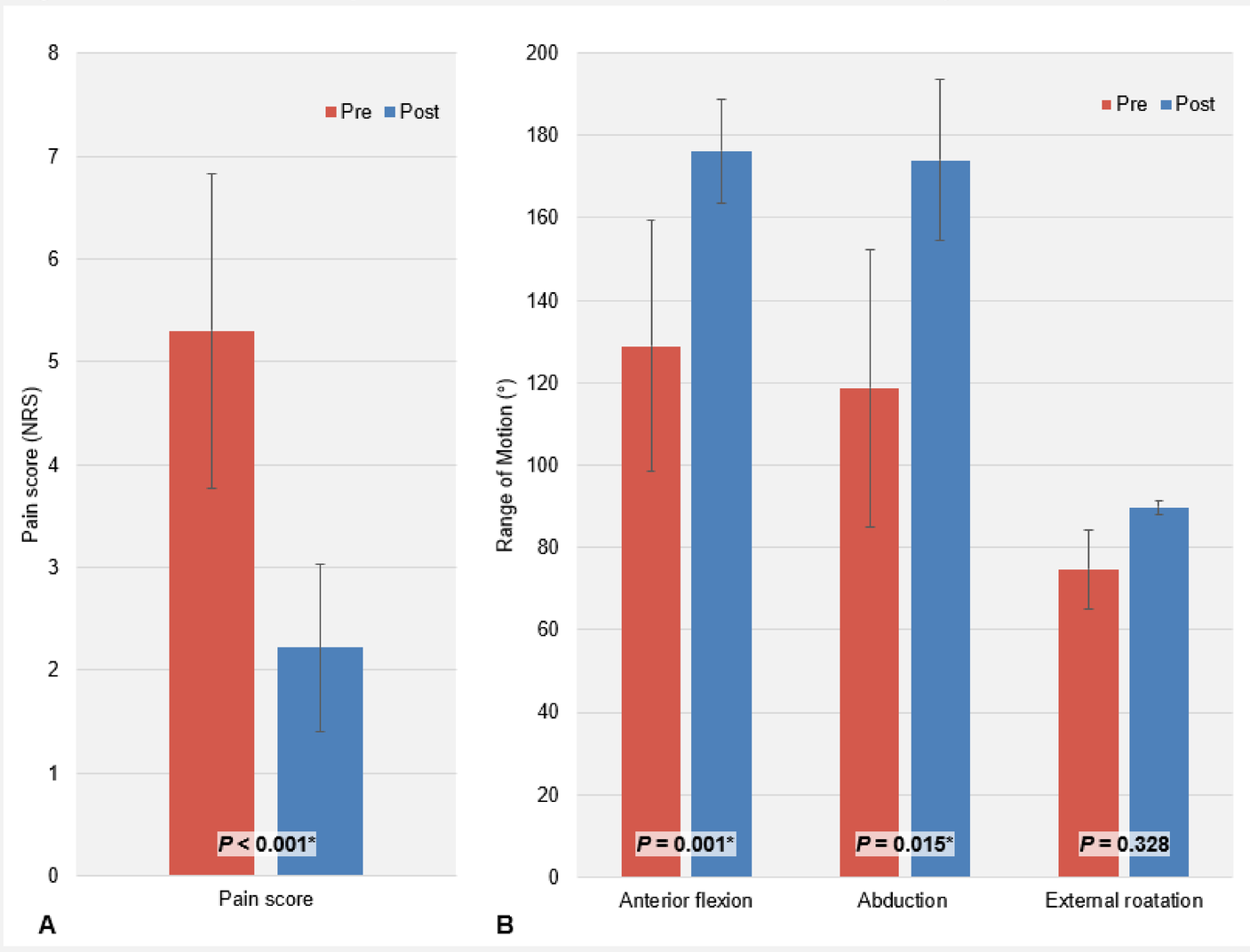
Results

- Treatment services were administered to 165 individuals, excluding the four who declined therapy due to enhanced functionality post-surgery.
- The baseline characteristics of the patients on POD1 are detailed in Table 2.
- The pain score [mean±SD] decreased from 5.3±1.5 to 2.2±0.8 (P < 0.001) (Fig. 1A).
- Significant improvements were observed in passive shoulder anterior flexion ROM, increasing from 129.0±30.3 to 176.3±12.5 degrees (P = 0.001), passive abduction ROM from 118.7±33.6 to 174.1±19.4 degrees (P = 0.015), and passive external rotation ROM from 74.7±9.7 to 89.7±1.6 degrees (P = 0.328) (Fig. 1B).
- A total of 112 patients (67.9%), previously unable to undergo head-up-tilt, successfully attained this ability after treatment.
- Among the 85 patients (51.5%) previously unable to transition from supine to sit independently, 83 patients could achieve the position change without any assistance following rehabilitation.

Table 2. Baseline characteristics

Variables	N = 165
I. Demographic characteristics	
Sex, n (%)	
Male	20 (10.9)
Female	15 (88.2)
Age, yr, mean (range)	38.5 (17~66)
II. Cancer related characteristics	
Incision side, n (%)	
Right	74 (40.4)
Left	91 (49.7)
III. Postoperative characteristics	
Pain score, numeric rating scale, mean (SD)	5.3 (1.5)
Shoulder range of motion, degree, mean (SD)	
Anterior flexion	129.0 (30.3)
Abduction	118.7 (33.6)
External rotation	74.7 (9.7)
Functional performance, n (%)	
Head-up-tilt	
Intact	53 (32.1)
Impaired	112 (67.9)
Supine-to-sit	
Independent	85 (51.5)
With assist	80 (48.5)

Figure 1. Pain score and passive shoulder ROM before and after early rehabilitation



Conclusion

Early patient education and rehabilitation following transaxillary robot-assisted thyroidectomy seems to be effective in relieving postoperative pain and restoring shoulder ROM. Further single-blinded randomized controlled study controlled by ice pack application and analgesic use should follow to prove the superiority of early rehabilitation over current medical practice.

Disclosure of Interest: None Declared.