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Compliance and outcome of osteoporosis treatment after total knee arthroplasty

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Introduction 1

- ❖ Incidence of Knee OA & osteoporosis has been increasing
  - ➢ Knee OA (pain) ***vs*** Osteoporosis (No symptom)

    → Osteoporosis: underdiagnosis
  - ➢ Approximately 20~50% of patients undergoing TKA were diagnosed with osteoporosis

- ❖ Treatment of osteoporosis is important after TKA
  - ➢ BMD may decrease until approximately 24 months after TKA
  - ➢ Risk of periprosthetic fractures
  - ➢ Aseptic loosening

YB Park, AOTS, 2020

Anderson, J Arthroplasty, 2019

Introduction 2

- ❖ Treatment tool modality & compliance is an important factor for osteoporosis treatment
- ❖ Treatment tool
  - ➢ Modality : SERM, Bisphosphonate, denosumab..
  - ➢ Dosing method : Daily, once a week, twice a month, per 6M, per 1Y
- ❖ Compliance
  - ➢ 1-year compliance: approximately 50%
  - ➢ Concomitant disease, treated by a specialist enhance treatment compliance
  - ➢ High when injection is required once every 6 months

Osteoporos Int, Pickney, 2005

BMC Womens Health,Huas, 2010

Purpose

- Osteoporosis treatment + TKA: positive effect on compliance

- Osteoporosis treatment after TKA prevent a decrease in BMD

Hypothesis

- Osteoporosis treatment compliance after TKA will be high

- Osteoporosis treatment results after TKA will be as good as those without TKA.

Material and Method

- Retrospectively study (2019.3~2020.12): diagnosed with osteoporosis for the first time
  - In an outpatient clinic (OPD group)
  - Before TKA (TKA group)

- The criteria for osteoporosis diagnosis: same as insurance standard
  - Average T-score of −2.5 or less at two or more points on the L-spine on DEXA
  - Lowest T-score of −2.5 or less in the femur excluding the ward
  - Defined as only one of these two conditions

Material and Method

- ❖ Exclusion criteria
  - ➢ Other than denosumab
  - ➢ fractures during treatment
  - ➢ changed medications
- ❖ Treatment result (after 1 Y)
  - ➢ Follow up rate
  - ➢ DEXA result

Results

	OPD group (n=41)	TKA group (n=26)	P-value
Sex	Male: 4 Female: 37	Male: 2 Female: 24	0.010
Age	73.9 ± 9.0	74.8 ± 6.7	0.684
Height (cm)	152.6 ± 5.8	149.9 ± 5.9	0.182
Weight (kg)	55.2 ± 8.6	58.6 ± 8.2	0.242
BMI	23.6 ± 2.7	26.0 ± 3.0	0.019
1 year follow-up	Follow up: 29 Follow up loss: 12	Follow up: 26 Follow up loss: 0	0.001

Results – DEXA outcome

		OPD group	TKA group	p-value
DEXA L-spine (lowest)	Initial	-2.83 ± 1.13	-3.10 ± 0.58	0.391
	After 1 year	-2.61 ± 1.09	-2.85 ± 0.83	0.435
	p-value	0.013	0.028	
DEXA L-spine more than 2 site	Initial	-2.68 ± 1.09	-2.82 ± 0.58	0.656
	After 1 year	-2.39 ± 1.13	-2.52 ± 0.89	0.656
	p-value	<0.001	0.006	
DEXA femur neck	Initial	-2.34 ± 0.76	-2.20 ± 0.83	0.621
	After 1 year	-2.24 ± 0.88	-2.05 ± 0.82	0.743
	p-value	0.016	0.158	
DEXA femur total	Initial	-2.03 ± 0.89	-2.06 ± 0.72	0.883
	After 1 year	-1.93 ± 0.87	-1.95 ± 0.70	0.481
	p-value	0.013	0.298	
Lowest value	Initial	-3.06 ± 0.48	-2.99 ± 039	0.534
	After 1 year	-2.89 ± 0.55	-2.72 ± 0.71	0.410
	p-value	0.002	0.027	
Δ T-score	DEXA L-spine	0.29 ± 0.31	0.29 ± 0.47	0.927
	DEXA L-spine more than 2 site	0.23 ± 0.42	0.24 ± 0.50	0.943
	DEXA femur neck	0.10 ± 0.20	0.16 ± 0.55	0.587
	DEXA femur total	0.10 ± 0.18	0.11 ± 0.50	0.908
	Lowest value	0.19 ± 0.29	0.27 ± 0.55	0.497

Limitation

- The number of patients was small
- Retrospective study: selection bias
- Short term follow-up: 1Y
- Difference hospital fee system (VHS medical center)

Conclusion

- Osteoporosis treatment compliance in the TKA group was significantly higher than that in the non-TKA group.

- When denosumab was used after TKA, there was no decrease in BMD, and the treatment results were equivalent to those in the non-TKA group.

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