National Anesthesia Practice Patterns for Ambulatory Meniscectomies: An Analysis of Data from the Anesthesia Quality Institute

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Introduction:

- Ambulatory meniscectomies represent one of the most commonly performed orthopedic operations in the US
- Can be performed under various anesthesia types
- Little is known about the utilization and related characteristics of these various approaches

Objective:

- Determine anesthesia-related practice patterns representative of a large number of participating institutions

Materials and Methods:

- Data from the Anesthesia Quality Institute (AQI) 2010 – 2013 were utilized
- Clinical Classifications Software (CCS) utilized to identify meniscectomies
- Groups underwent the procedure under general (GA), neuraxial (NA) and regional (RA) as the primary anesthetic
- Patient, provider and health care system-related characteristics were compared between groups
- Chi-square and ANOVA tests were used to determine differences between groups and a p-value of 0.05 was defined as significant
- Statistical analyses conducted in SAS 9.3

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Results:

- Approximately 7 million records were identified from 2010 – 2013 in the AQI database
- 88,639 menisectomies were identified that contained complete information on anesthesia type
- Primary type of anesthesia was listed as GA in 95.2%, as NA 1.6% and RA in 3.2% of cases
- Patients in the GA group were younger and had lower ASA class scores than those in the NA and RA group (51.6 vs. 56.7 vs. 53.9 years, P<0.001; ASA class ≥ 3, 16.0% vs. 35.9% vs. 24.7%, P<0.001)
- Average anesthesia times were longer for GA and NA than for RA (63 vs. 66 vs. 48 minutes, P<0.001)
- A board certified anesthesiologist was present in 66.8% of GA, 91.2% of NA and 79.4% of RA cases
- While the use of GA was fairly evenly distributed between institution types, the use of NA and RA was proportionately highest in medium community hospitals and freestanding facilities, respectively

Table 1: General Demographics Statistics by Anesthesia Type, 2010 – 2013

CATEGORY	GENERAL N (%)*	NEURAXIAL N (%)	REGIONAL N (%)	TOTAL N (%)	P-Value
Unweighted N	84,394	1,438	2,807	88,639	
Average Age					
Years: Mean (95% CI)	51.6 (51.5, 51.7)	56.7 (56.1, 57.4)	53.9 (53.5, 54.4)	51.8 (51.7, 51.9)	<0.0001
Gender					
Male	43,747 (51.8)	771 (53.6)	1,332 (47.5)	45,850 (51.7)	<0.0001
Female	38,309 (45.4)	663 (46.1)	1,447 (51.5)	40,419 (45.6)	
Unknown	654 (0.8)	3 (0.2)	0 (0.0)	657 (0.7)	
Missing	1,684 (2.0)	1 (0.1)	28 (1.0)	1,713 (1.9)	
Average ASA Class					
Mean (95% CI)	1.9 (1.8, 1.9)	2.3 (2.2, 2.3)	2.1 (2.0, 2.1)	1.9 (1.9, 1.9)	<0.0001
ASA Class					
3 or higher	13,481 (16.0)	516 (35.9)	694 (24.7)	14,691 (16.6)	<0.0001
Average Anesthesia Times					
Minutes: Mean (95% CI)	63.0 (62.7, 63.4)	65.6 (63.4, 67.7)	47.9 (46.8, 49.1)	62.6 (62.2, 63.0)	<0.0001
Anesthesia Providers					
Resident Involvement	2,853 (3.4)	38 (2.6)	5 (0.2)	2,896 (3.3)	<0.0001
CRNA Involvement	35,693 (42.3)	275 (19.1)	466 (16.6)	36,434 (41.1)	<0.0001
Board Certification Present					
Yes	56,393 (66.8)	1,312 (91.2)	2,230 (79.4)	59,935 (67.6)	<0.0001
No	9,745 (11.5)	50 (3.5)	430 (15.3)	10,225 (11.5)	
Missing	18,256 (21.6)	76 (5.3)	147 (5.2)	18,479 (20.8)	
Facility Type					
University Hospital	980 (1.2)	6 (0.4)	1 (0.0)	987 (1.1)	<0.0001
Large Community Hospital (over 500 beds)	6,675 (7.9)	72 (5.0)	20 (0.7)	6,767 (7.6)	
Medium Community Hospital (100-500 beds)	38,031 (45.1)	950 (66.1)	304 (10.8)	39,285 (44.3)	
Small Community Hospital(less than 100 beds)	4,264 (5.1)	52 (3.6)	144 (5.1)	4,460 (5.0)	
Specialty Hospital	2,052 (2.4)	1 (0.1)	4 (0.1)	2,057 (2.3)	
Attached Surgery Center	9,197 (10.9)	115 (8.0)	98 (3.5)	9,410 (10.6)	
Freestanding Surgery Center	19,547 (23.2)	228 (15.9)	2,205 (78.6)	21,980 (24.8)	
Pain Clinic	1,316 (1.6)	2 (0.1)	18 (0.6)	1,336 (1.5)	
Surgeon Office	131 (0.2)	0 (0.0)	0 (0.0)	131 (0.1)	
NA	2,201 (2.6)	12 (0.8)	13 (0.5)	2,226 (2.5)	

*N(%) unless otherwise specified. Percent's may not total to 100 due to rounding.

Discussion:

- The majority of meniscetomies identified in the AQI data were performed under GA
- Variables potentially involved in the choice of anesthetic technique by providers included:
  - ASA status, length of procedure, provider type, and the board certification status of the anesthesiologists
- Older patients with a higher ASA status tended to receive NA, while younger patients with a lower ASA score received GA
- Procedures where NA was provided took longer than those with GA or RA, on average
- Board certification of the attending physician differed among all three anesthesia types

Conclusions:

- NA and PNB are more frequently considered among older, sicker patients; reasons for this remain speculative
- Data can be used to allow institutions to compare their own practice patterns against this cohort

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