Insurance Type Significantly Impacts Operative Approach and Time to Surgery of Elective Inguinal Hernia Repairs

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PURPOSE

Aim: To examine whether insurance type is associated with delays in time to elective inguinal hernia repairs

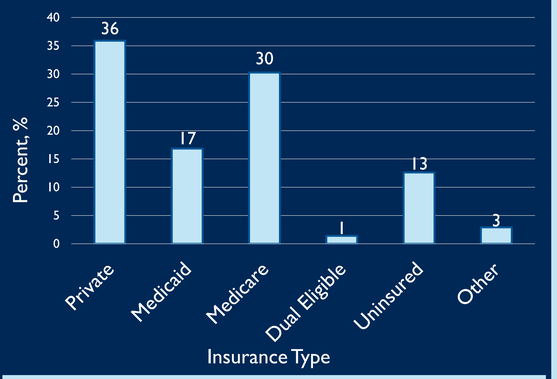
STUDY DESIGN

- Retrospective single-institution review from 2012 to 2021
- Outcomes: operative approach, time to hernia repair, and insurance type.
- Analyses included descriptive statistics and univariable associations (Chi-squared or Mann-Whitney U)
- 2 multivariable models: 1) time-to-hernia repair Cox proportional hazard model (hazard ratio; 95% confidence intervals) and 2) logistic regression model (odds ratio; 95% confidence intervals, CI) predicting the odds of greater than the median number of days from clinic visit to surgery

BASELINE CHARACTERISTICS

	N = 1206
	median [IQR], n (%)
Age	57.5 [46.8-65.3]
Male	1121 (93)
Tobacco or EtOH use	874 (73)
BMI	26.2 [22.9-28.8]
ASA 2	654 (54)
ASA 3	366 (30)
Recurrent ipsilateral hernia	147 (12)
Preoperative imaging	447 (37)

INSURANCE TYPE



Private: Blue Cross, commercial, managed care. Medicaid: Medicaid and Medicaid HMO. Medicare: Medicare and Medicare HMO, CMS, Federal. Dual eligible: primary Medicare and secondary Medicaid. Uninsured: charity, self-pay. Other: workers' compensation, additional.

PROCEDURAL DETAILS

	N = 1206
	n (%), median [IQR]
Hernia Type	
Indirect	807 (67)
Direct	313 (26)
Bilateral hernias	415 (34)
Operative time, minutes	110 [86-142]
Operative approach	
Open	439 (36)
Laparoscopic	410 (34)
Robotic	356 (30)
Time to Surgery, days	39 [20-79]

RESULTS BY INSURANCE TYPE

	Time to surgery (median days [IQR])	Open procedure (n, %)	All Minimally Invasive Procedures	Laparoscopic	Robotic
Private	34 [18-66]	85 (20)	348 (80)	180 (42)	168 (39)
Medicaid	51 [26-105]	89 (44)	114 (56)	58 (29)	56 (28)
Medicare	41 [20-92]	156 (43)	209 (57)	94 (26)	115 (32)
Dual Eligible	55 [23-97]	8 (47)	9 (53)	5 (29)	4 (24)
Uninsured	38 [18-110]	88 (58)	64 (42)	57 (38)	7 (5)
Other	30 [20-55]	13 (37)	22 (63)	16 (46)	6 (17)
p-value	<0.001	<0.001	<0.001		

- Operative approach and time to surgery significantly differed across insurance types
- Privately insured patients were more likely to undergo minimally invasive surgery compared to uninsured patients.

FACTORS ASSOCIATED WITH TIME TO SURGERY

Multivariable Logistic Regression

	Adjusted Odds Ratio	95% CI	*p*-value
Medicaid coverage	1.68	1.20-2.36	0.002
Any tobacco or EtOH use	1.39	1.06-1.83	0.018
Preoperative imaging	1.53	1.19-1.97	0.001
ASA classification	1.23	1.01-1.52	0.044
Robotic approach	1.58	1.17-2.13	0.003

Multivariable Cox time-to-event Regression

	Adjusted Hazard Ratio	95% CI	*p*-value
Medicaid coverage	0.81	0.69-0.95	0.01
Other insurance	0.77	0.64-0.92	0.01
Robotic repair	0.84	0.72-0.97	0.02

- Based on the multivariable time-to-event model:
  - Medicaid coverage, other insurance, or a robotic repair had an increased time to surgery
- Based on the logistic regression model:
  - Medicaid coverage, any tobacco or alcohol use, preoperative imaging, robotic approach, and increasing ASA classification were significantly associated with increased odds of time to surgery greater 39 days (median).

CONCLUSIONS

- Medicaid patients and those undergoing robotic repair were more likely to experience delayed time to surgery.
- Patients who were uninsured remained more likely to have open repairs.
- Inequities in access to surgery (both in time and approach) should be further investigated.