

15-year Trend Analysis of Early Onset Idiopathic Scoliosis Surgeries

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Introduction

- Early onset idiopathic scoliosis (EOS) can cause substantial morbidity.
- EOS may require surgical intervention.





Purpose:

Evaluate US trends in early onset idiopathic scoliosis from 1997-2012 (15 years).

Design:

- Retrospective study of idiopathic scoliosis patients aged between 0 and <10 years old.</p>
- Identified by ICD-9-CM code 737.30

Data from Kid's Inpatient Database

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Methods

- Identified EOS surgeries:
 - Posterior
 - Anterior
 - Combined
- Collected data on:
 - Co-morbidities
 - In-hospital complications
 - Length of hospital stay (LOS)
 - Hospital charges as per 2012 inflation
- Analyzed data for all EOS surgery patients and separately in posterior, anterior and combined surgeries.
- Line regression used to access the trends.

Results

- Identified 545 patients (37% male, 63% female) during 15-year study period.
- EOS surgeries:
 - Posterior = 57%
 - Anterior = 15%
 - Combined = 28%
- Mortality rate = 0.1%
- LOS had a mean of 8 days
- Co-morbidities had a mean of 5
- Complication rate had a mean of 6%
- Hospital charges (per 2012 dollars) had a mean of \$119,613
- Female gender, LOS, complications and co-morbidity rates were constant and hospital charges increased over 15 years.

Surgery rate over 15 years

- Posterior surgery rate significantly increased
- Combined surgery rate significantly decreased
- There was a trend in decrease in anterior surgery rate

Posterior surgeries increased (p = 0.004)

Combined surgeries decreased (p = 0.001)



- Complication and co-morbidity rates were constant for all types of surgeries.
- LOS significantly decreased for anterior surgeries (p = 0.008), but remained constant for posterior and combined surgeries.
- Hospital charges significantly increased for all types of surgeries.

surgery	years	Surgery rates %	Gender (F)	Mortality %	LOS (days)	Comorbiditi es (n)	complicatio ns	Hospital charges
Posterior	1997	33	47	0.00	7	5	0	45947
	2000	29	60	0.00	7	5	7	60734
	2003	58	63	1.70	8	4	3	92039
	2006	64	31	0.00	7	4	3	119103
	2009	66	74	0.00	7	5	6	150915
	2012	91	67	0.00	9	7	6	176791
P – value		0.004	0.46		0.29	0.22	0.22	< 0.001
Anterior	1997	17	50	0	8	4	12.5	51884
	2000	31	75	0	7	5	6.3	51416
	2003	11	50	0	6	3	30	87189
	2006	11	75	0	6	3	0	124454
	2009	13	57	0	5	4	0	134862
	2012	4.3	80	0	5	9.4	0	145882
P – value		0.126	0.344		0.00 8	0.27	0.308	0.002
Combined	1997	50	57	0.00	11	6	13	102787
	2000	39	70	0.00	8	6	5	97747
	2003	31	71	0.00	12	6	0	140559
	2006	26	45	0.00	7	7	6.9	138023
	2009	21	48	0.00	10	8	8	193265
	2012	4.3	40	0.00	6.2	5.4	0	204083
P- value		0.001	0.105		0.27	0.66	0.28	0.004

Conclusion

• Over the 15-year period, there was no change in complication rates, co-morbidity rates and length of hospital stay for early onset idiopathic scoliosis surgeries. Posterior surgery rates and hospital charges increased and combined surgeries decreased significantly.