



DOERNBECHER
CHILDREN'S
Hospital

Relative Value Units Do Not Account for Complexity and Operative Time in Hypospadias Surgery

Kyle A Gillis MD, Nicholas H Chakiryan MD, David Jiang MD, Ann Martinez Acevedo BS, Christopher Austin MD, Casey A Seidman MD

Pediatric Urology, Doernbecher Children's Hospital, Oregon Health & Science University, Portland, OR

Background

- Most US physicians are compensated according to relative value units (RVU) system
- Work RVU (wRVU) are assigned to procedures according to “time, technical skill and effort, mental effort and judgment, and stress to provide a service”
- wRVU should theoretically account for different operative times, resulting in equivalent RVU per unit time



Background

- Dearth of literature on wRVU for hypospadias repair

Primary aim: **assess if operative time and complexity of hypospadias surgery** is adequately accounted for in the current RVU system



Method

The American College of Surgeons National Surgical Quality Improvement Program Participant User File (ACS-**NSQIP** PUF) database was utilized

- Identified hypospadias surgeries (2012-2017)
 - Primary and secondary CPT codes
- Calculated mean total work RVU and total mean operative time for **hypospadias surgery**
 - Excluded anesthesia time
 - Calculated work **RVU/hour**
- Multivariable linear regression analysis performed to assess influence of wRVU and operative time on RVU/hour



Results

Study population: 10,548 hypospadias cases

- Simple (MAGPI)
- Single stage distal
- Single stage mid
- Single stage proximal
- First stage of two-stage repair
- Second stage of two-stage repair

Hypospadias procedures	CPT	N	Total work RVU (median, IQR)	Op Time in minutes (Median, IQR)	RVU/hr (Median, IQR)
Simple distal (eg. Magpi, V-flap)	54322	2219	14.0 (14.0-14.0)	58 (40-84)	15.5 (10.8-22.1)
Single stage: Distal	54324	4161	17.6 (17.6-17.6)	89 (66-113)	13.2 (9.9-17.6)
Single stage: Midshaft	54326, 54328	2494	17.0 (16.9-17.0)	88 (67-116)	12.4 (9.4-17.0)
Single stage: Proximal	54332, 54336	945	18.4 (18.4-18.4)	128 (91-167)	9.8 (7.3-14.5)
Two stage: Stage 1	54304	29	21.9 (21.9-27.8)	137 (71-167)	12.2 (9.4-20.1)
Two stage: Stage 2	54308 , 54312, 54316	700	14.5 (12.6-17.2)	118 (90-152)	8.0 (6.2-11.1)

Results

Table 2: RVU/hr compared by One vs. Two-stage

Single vs. Staged	N	RVU/hr (mean, 95% CI)	P
One-stage	9,810	15.9 (5.5-16.2)	P <0.001
Two-stage	728	9.9 (9.2-10.6)	

Results

Table 3: RVU/hr compared by Complexity

Complexity	N	RVU/hr (mean, 95%CI)	P
Distal or Mid	8,869	16.2 (15.8-16.5)	P <0.001
proximal	1,670	11.8 (10.4-13.1)	

Linear regression model revealed each additional hour of operative time expected to decrease RVU/hour by 10.1

- -10.1, 95% CI: -9.7 - -10.5, p < 0.001

Limitations

- Retrospective study using large national database
- First and secondary CPT codes utilized
- NSQIP database is voluntary, not necessarily representative



Conclusions

Contemporary national-level database analysis suggests **current RVU system significantly favors shorter and simpler procedures in hypospadias surgery**

