Unilateral Vs Bilateral First Ray Surgery:

A Prospective Study Of 186 Consecutive Cases - Complications, Patient Satisfaction, and Cost To Society

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Historical Significance

- Literature shows benefits in Total Knee and Hip Arthroplasty performed bilaterally
- Nothing but anectodal evidence comparing bilataral versus unilateral foot surgery
  - Increased complication rate

Rosenberg AG. True Indications for Bilateral Simultaneous TKR are Rare. Orthopedics. 2000;23:540.

Bullock DP, Sporer SM, Shirreffs TG Jr. Comparison of simultaneous bilateral with unilateral total knee arthroplasty in terms of perioperative complications.J Bone Joint Surg Am. 2003 Oct;85-A(10):1981-6

Stubbs G, Pryke SE, Tewari S, Rogers J, Crowe B, Bridgfoot L, Smith N. Safety and cost benefits of bilateral total knee replacement in an acute hospital. ANZ J Surg. 2005 Sep;75(9):739-46

Horne G, Devane P, Adams K.. Complications and outcomes of single-stage bilateral total knee arthroplasty. ANZ J Surg. 2005 Sep;75(9):734-8.

Bettenhausen DA, Cragel M. The Offset-V Osteotomy with Screw Fixation: A Retrospective Evaluation of Unilateral Versus Bilateral Surgery. J Foot Ankle Surg 36(6):418-421,1997.

Purpose

- Compare rates of early complications of bilateral vs. unilateral foot surgery
- Identify reasons patients choose bilateral vs. staged bilateral foot surgery
- Measure rate of recovery between bilateral and staged bilateral foot surgery
  - RADL – return to activities of daily life
  - RTW – return to work
- Evaluate cost to society of unilateral vs. bilateral foot surgery

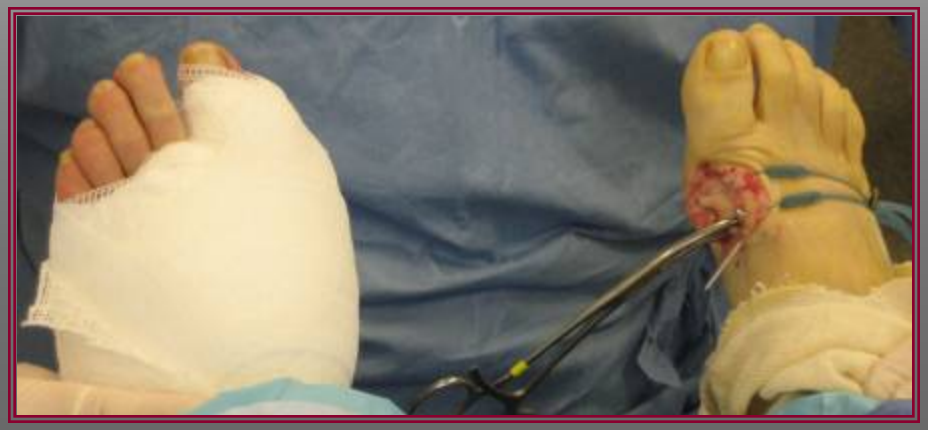
INCLUSION CRITERIA

- Patients undergoing hallux valgus or limitus surgery without any other procedures performed on that foot under same anesthesia session
  - Scarf bunionectomy
  - Scarf-Akin bunionectomy
  - Silastic total joint arthroplasty
- If bilateral pathology present, patient given choice of having simultaneous or staged-bilateral foot surgery

Material & Methods

- From March 1, 2005 – January 31, 2006

  200 consecutive patients prospectively included
- Primary diagnosis was hallux valgus or hallux rigidus
- 14 patients (7%) were unavailable for follow-up and were excluded



6 WEEK & 3 MONTH EVALUATION

- Evaluated for early complications that have been associated with first MTP surgery:
  - Infection
  - Wound dehiscence
  - Stress fracture
  - Swelling +2 or greater
  - Pain greater than 7 on Visual Analog Scale (VAS)
  - Return to the operating room within 3 months of surgery

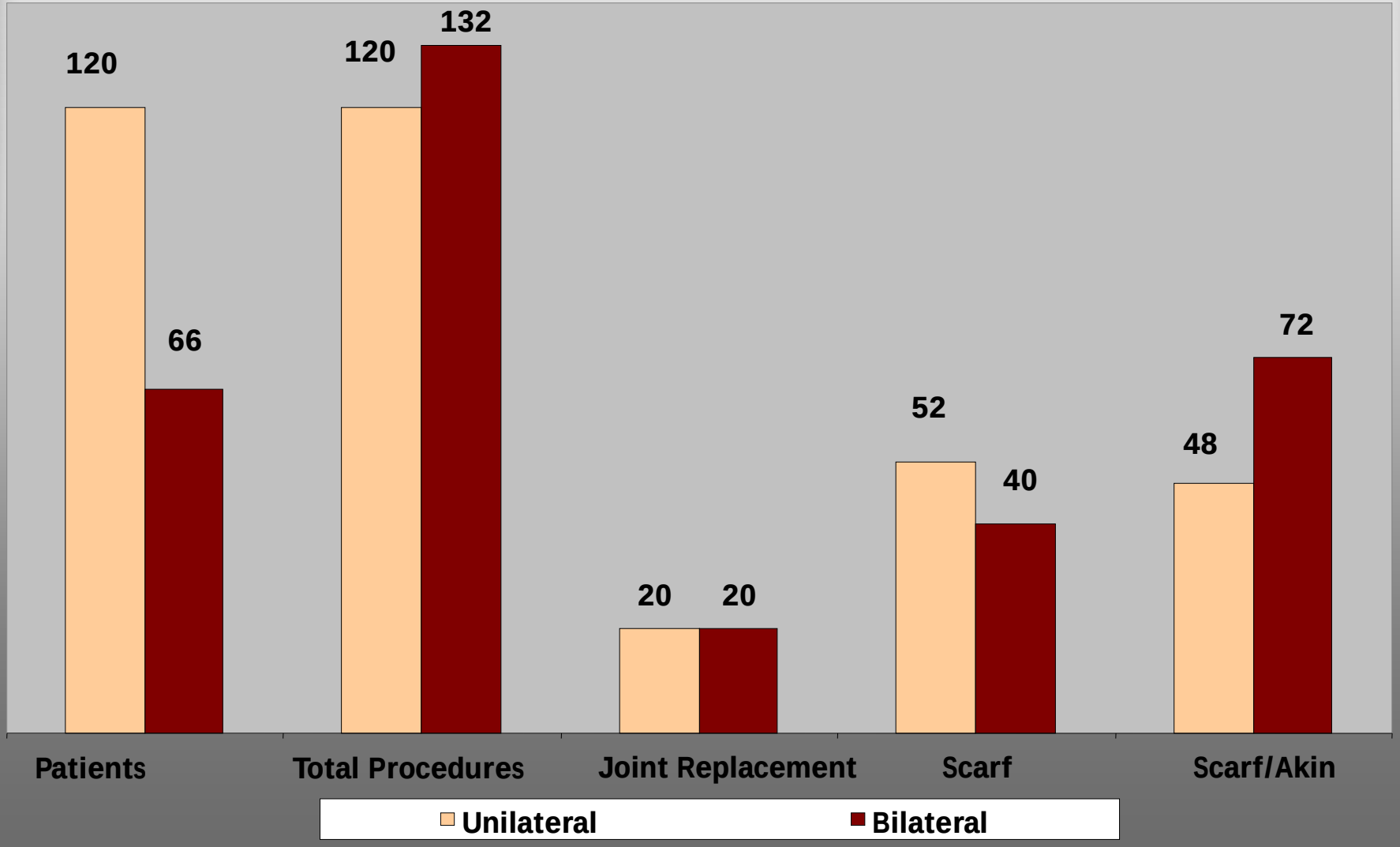
3 MONTH EVALUATION

- Interviewed by a blinded assessor about:
  - Return to ADLs (RADL)
  - Return to work (RTW)
  - Return to shoe gear
  - Reasons for choosing one treatment group over the other, if possible
  - Overall satisfaction with the early results of the surgery

Results

- 186 Patients with 252 procedures were available for evaluation
  - 66 synchronous bilateral correction
  - 7 staged bilateral correction
  - 120 unilateral correction

Demographics (n)



STATISTICAL DATA

- No difference (95% CI)
  between RTW and RADL
  between unilateral and bilateral foot surgery

GROUP	B/L TJR RTW	U/L TJR RTW	B/L TJR RADL	U/L TJR RADL
MEAN	16.8	22.4	18.2	22.4
SD	13.3	21.97	12.52	23.56
SEM	2.98	4.91	2.8	5.27
N	20	20	20	20
P VALUE	0.3754		0.5163	
CI	95%		95%	

GROUP	B/L SCARF RTW	U/L SCARF RTW	B/L SCARF RADL	U/L SCARF RADL
MEAN	16.8	19.12	16.1	19.06
SD	11.07	13.87	11.45	12.79
SEM	1.75	1.92	1.81	1.74
N	40	52	40	52
P VALUE	0.2557		0.2666	
CI	95%		95%	

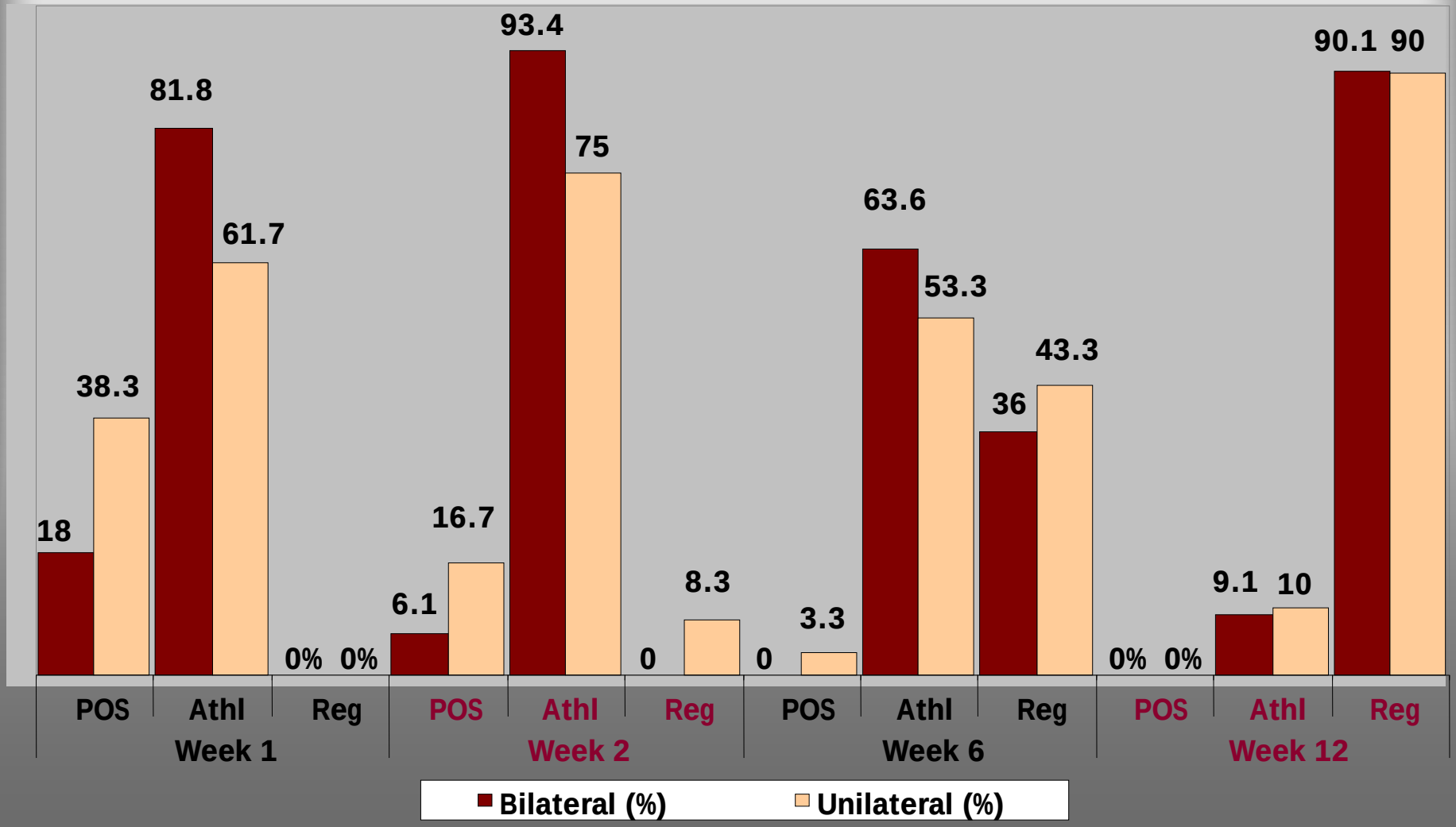
GROUP	B/L SCARF/AKIN RTW	U/L SCARF/AKIN RTW	B/L SCARF/AKIN RADL	U/L SCARF/AKIN RADL
MEAN	18.28	20.71	14.39	18.08
SD	12.01	16.27	6.42	10.4
SEM	1.42	2.35	0.76	1.5
N	72	48	72	48
P VALUE	0.4753		0.031	
CI	95%		95%	

SEM = STANDARD ERROR OF THE MEAN
N = NUMBER PARTICIPANTS
CI = CONFIDENCE INTERVAL
SD = STANDARD DEVIATION
TJR - TOTAL JOINT REPLACEMENT
RTW – REURN TO WORK
RADL - RETURN TO ACTIVITIES OF DAILY LIVING

Post Op Shoe Gear

- Athletic Shoes at 1 week
  - 81.8% of bilateral cases
  - 61.7% of unilateral cases
- Normal Shoes at 6 weeks
  - 36.4% of bilateral cases
  - 43.3% of unilateral cases
- Normal Shoes at 12 weeks
  - 90% of bilateral cases
  - 90% of unilateral cases

Shoe Gear (%)



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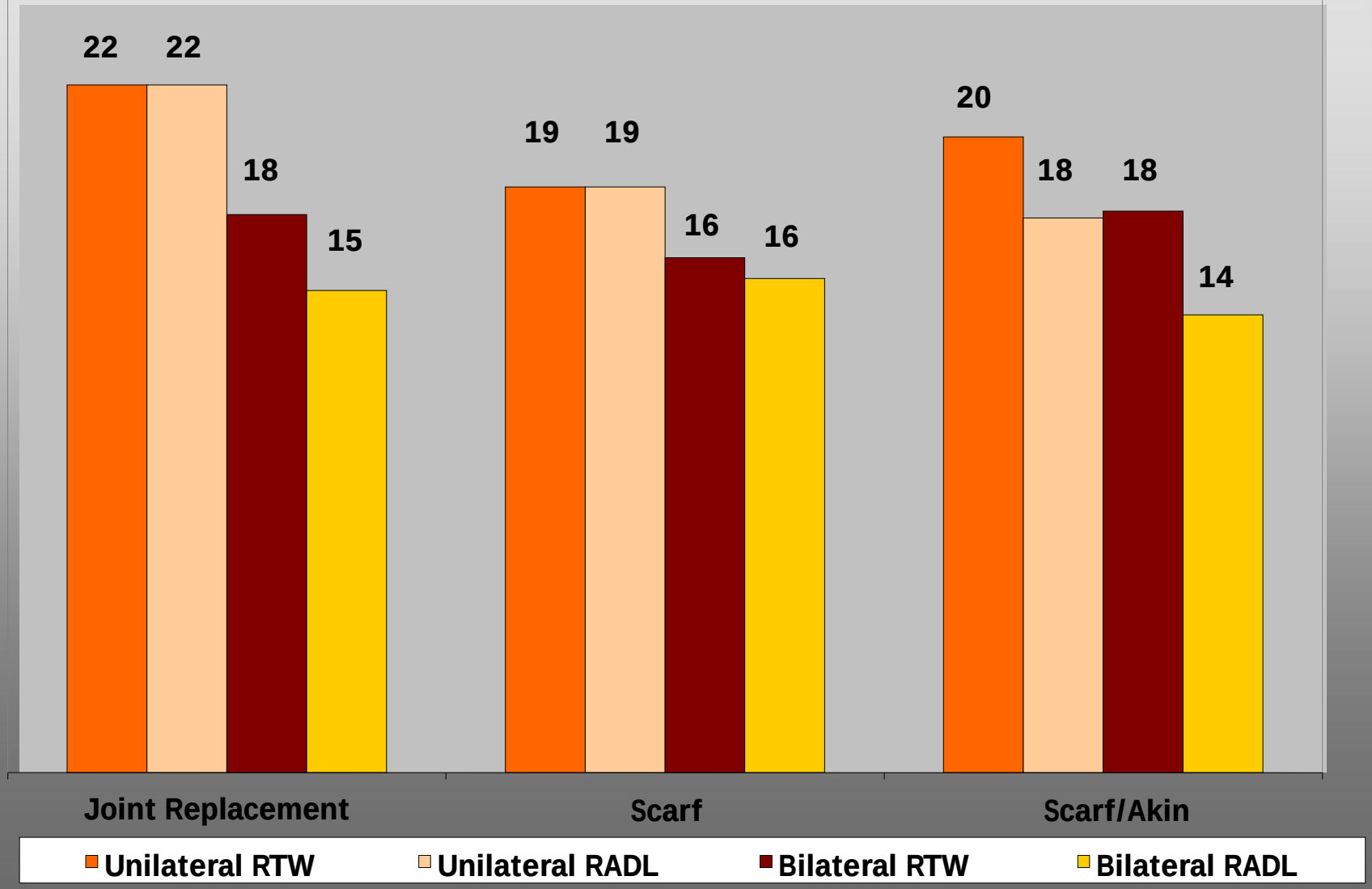
Return to Work and Activities of Daily Life

- RTW was quicker in the bilateral group
  - Mean 17.8 days bilateral
  - Mean 20.3 days unilateral
- RADL was quicker in the bilateral group
  - Mean 15.2 days bilateral
  - Mean 19.25 days unilateral
  - no statistical difference between RADL and RTW in bilateral or unilateral 1st ray surgeries

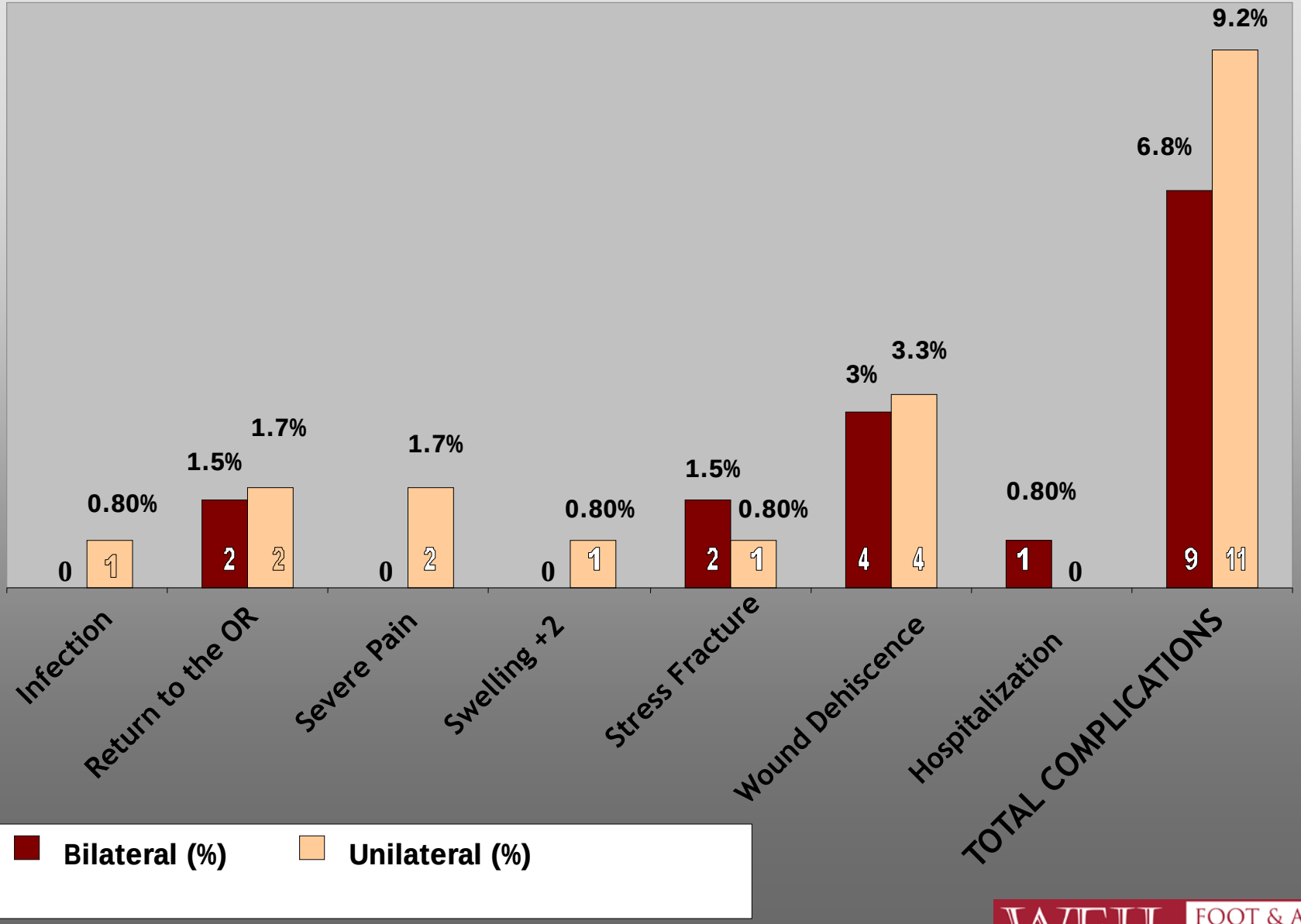
Return to ADL's and Work (days)



Complication Rate

- 6.8% in bilateral group
- 9.2% in unilateral group
- Most common complication wound dehiscence
  - 4 in each group at 3%, 3.3%
- Hallux Varus – 4
  - 2 in each group
- DVT - 1
  - bilateral group

Complications %



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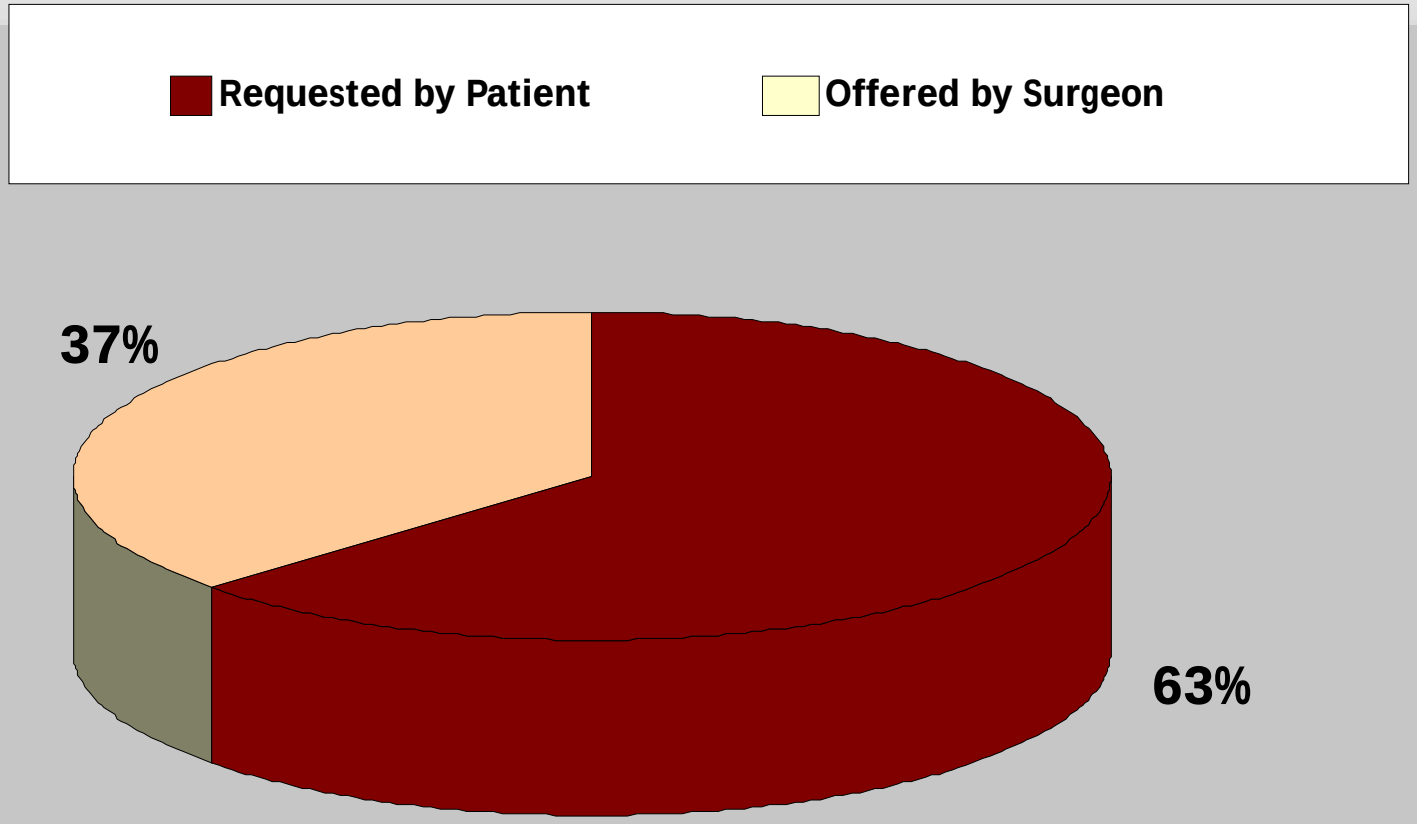
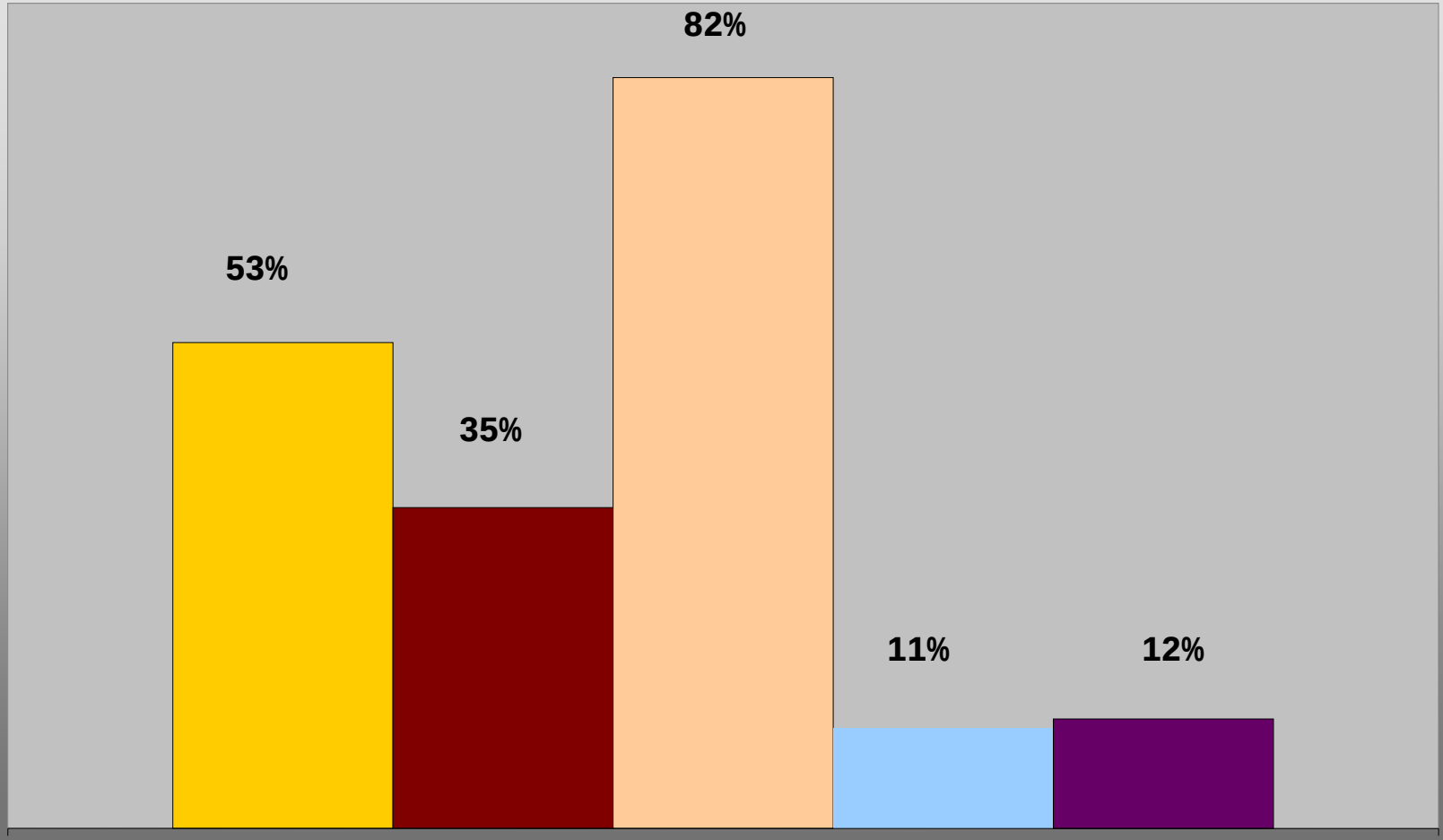
Decision for Bilateral Correction

- Patients requested this 63% of time
- Surgeon recommended this 37% of time
- Patients preferred simultaneous bilateral correction because:
  - Did not want the inconvenience of 2nd surgery
  - Did not want to miss work
  - Did not want to have pain for two surgeries

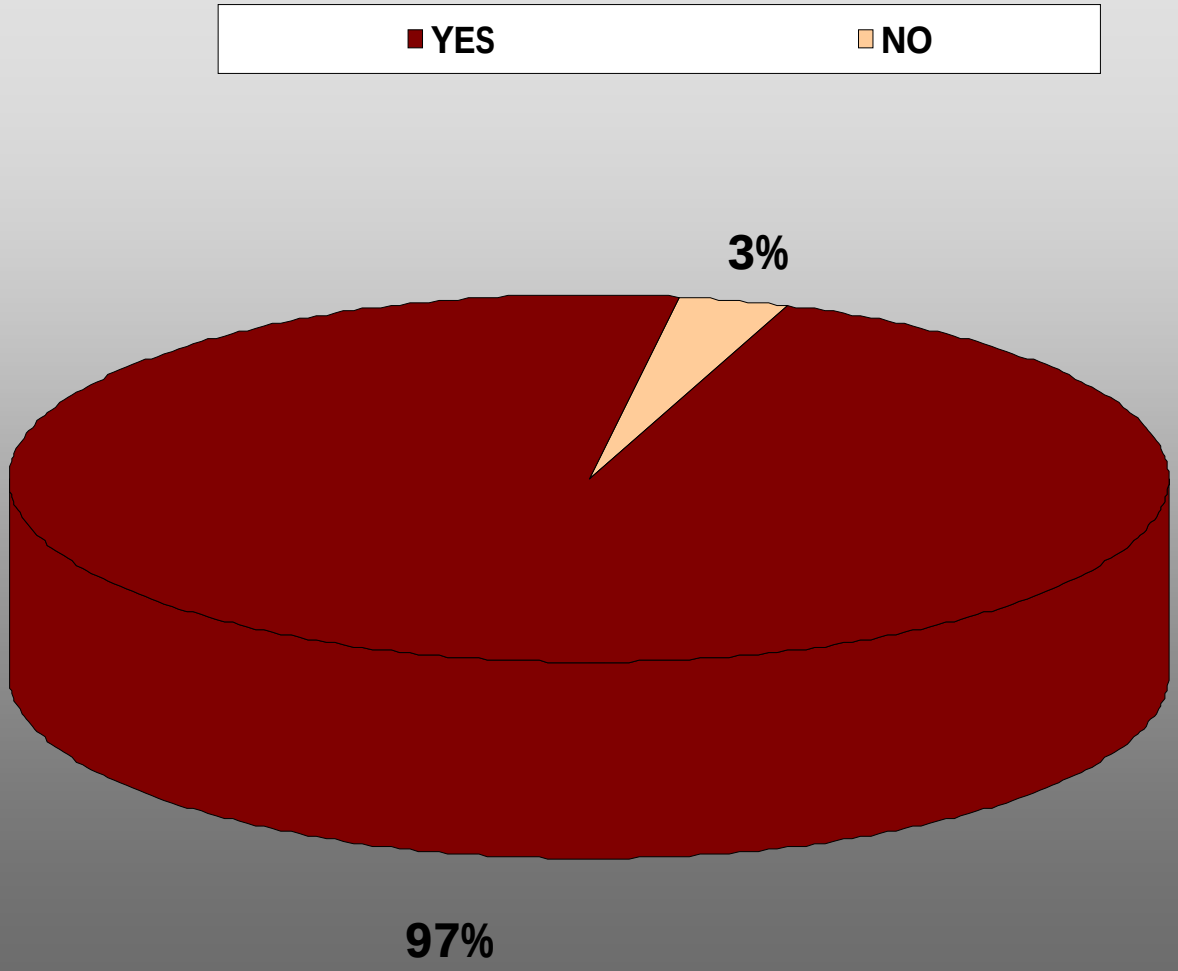
Bilateral Surgery



Patient Reasons for Choosing Bilateral Simultaneous surgery



Would you have bilateral surgery again?



Cost Analysis of Surgery

- Amounts used for calculation were the following:
  - $1000 average surgeon's cost to insurance companies for a hallux valgus surgery
  - $500/hour average anesthesiologist cost to insurance carriers
  - $1600 hospital outpatient or surgery center cost to insurance companies for hallux valgus
- The average anesthesia time calculated for unilateral surgery is 45 minutes
- 1.25 hours for bilateral simultaneous hallux valgus surgery
- In cases of bilateral synchronous foot surgery, the surgeon and facility fee are reduced by half for the second foot.

Cost Analysis of Surgery

PROCEDURE	TOTAL COST OF SX
Unilateral HAV	$3,100
Staged Bilateral HAV	$6,200
Simultaneous Bilateral HAV	$4,525

PROCEDURE	SURGEON COST	ANESTHESIA COST	HOSPITAL COST
Unilateral HAV	$1,000	$500	$1,600
Staged Bilateral HAV	$1,000 x 2 = $2,000	$500 x 2 + $1,000	$1,600 x 2 = $3,200
Simultaneous Bilateral HAV	$1,000 + $500 = $1,500	$625	$1,600 + $800 = $2,400

Summary

- Our study shows that bilateral synchronous 1st ray surgery is as safe as unilateral corrections
- Bilateral correction did not have an increased complication rate
- Patients returned to shoe gear and activities at the same rate in the bilateral as the unilateral group
- Post operative pain levels were no different in the bilateral and unilateral groups
- Patients requested bilateral corrections 63% of the time while it was suggested by the surgeon 37% of the time
- 97% of patients undergoing bilateral correction would have bilateral correction again given the choice

Conclusion

Total Savings:

- $1725/patient
- 23.3 days of activities of daily life
- 22.8 days of missed work

On patients needing correction on 1st ray pathology if both procedures are performed at the same time

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