

# Sauvé-Kapandji and Darrach Salvage Procedure Rates for Distal Radioulnar Joint Arthritis and Instability

Reece Moore<sup>2</sup>, Ryan O'Leary<sup>2</sup>, Fernando Herrera<sup>1</sup>

1. Division of Plastic and Reconstructive Surgery, Department of Surgery, Medical University of South Carolina.
2. College of Medicine, Medical University of South Carolina.

## ABSTRACT

**Background:** Distal radioulnar joint (DRUJ) instability and arthritis is often a painful and functionally limiting pathology. Two common salvage procedures for DRUJ dysfunction are the Darrach and Sauvé-Kapandji (S-K) procedures. This study aims to provide an analysis of national Darrach and S-K procedure utilization rates and patient demographics.

**Methods:** A national ambulatory surgery database, the 2018 Nationwide Ambulatory Surgery Sample (NASS), was filtered for Darrach and S-K procedure encounters. Data related to patient demographics and past medical history, indications for DRUJ salvage, and concurrent hand/wrist procedures were collected.

**Results:** Database analysis revealed 1044 Darrach and 223 S-K procedure encounters. Patients undergoing Darrach procedures were older (60 vs 57,  $p = 0.002$ ) and more likely to be female (66.1% vs 54.6%,  $p < 0.05$ ). Patients <35 years-old underwent S-K procedures at greater rates compared to Darrach (13.9% vs 8.6%,  $p < 0.05$ ). Primary osteoarthritis proved to be the most common indication for DRUJ salvage (64.8%) compared to rheumatoid arthritis (23.2%) and post-traumatic osteoarthritis (12.0%). Darrach and S-K procedures were accompanied by a secondary procedure at rates of 64% and 41%, respectively. The most common secondary procedures were tendon transfer, implant removal, neuroplasty and nerve transection, and wrist arthroscopy.

**Conclusions:** Patient age and sex are associated with DRUJ salvage procedure selection. S-K procedures are used higher rates in male and younger patient populations. Further, primary osteoarthritis and rheumatoid arthritis are the main underlying pathologies for Darrach and S-K procedures.

		Procedure Name					
		Darrach		Sauvé-Kapandji		p-value	
		%	Count	%	Count		
<b>Sex</b>	Male	33.9%	354	45.3%*	101		
	Female	66.1%*	690	54.7%	122		
<b>Age Range</b>	<35	8.6%	90	13.9%*	31		
	36-45	7.4%	77	8.1%	18		
	46-55	16.0%	167	18.4%	41		
	56-65	25.7%	268	23.3%	52		
	>65	42.3%	442	36.3%	81		
<b>Median household income national quartile for patient ZIP Code</b>	<\$42,999	22.3%	227	23.4%	52		
	\$43,000-\$53,999	28.3%	289	26.1%	58		
	\$54,000-\$70,999	28.6%	292	32.4%	72		
	>\$71,000	20.8%	212	18.0%	40		
<b>Primary expected payer</b>	Medicare	47.8%	498	45.3%	101		
	Medicaid	10.6%	110	13.9%	31		
	Private	31.2%	325	30.5%	68		
<b>Hospital academic status</b>	Non-academic	21.6%	225	22.0%	49		
	Academic	78.4%	819	78.0%	174		
<b>Obesity</b>	No	89.8%	938	87.4%	195		
	Yes	10.2%	106	12.6%	28		
<b>Hypertension</b>	No	65.7%	686	68.2%	152		
	Yes	34.3%	358	31.8%	71		
<b>Type II Diabetes Mellitus</b>	No	87.2%	910	87.0%	194		
	Yes	12.8%	134	13.0%	29		
<b>Age Range</b>	<35	Male	50.0%	45	58.1%	18	
		Female	50.0%	45	41.9%	13	
	36-45	Male	42.9%	33	38.9%	7	
		Female	57.1%	44	61.1%	11	
	46-55	Male	34.1%	57	36.6%	15	
		Female	65.9%	110	63.4%	26	
	56-65	Male	31.3%	84	46.2%*	24	
		Female	68.7%*	184	53.8%	28	
	>65	Male	30.5%	135	45.7%*	37	
		Female	69.5%*	307	54.3%	44	

**Table 1. Patient characteristics for Darrach and Sauvé-Kapandji procedures.** Patient proportions and absolute encounter counts are shown for each category. (\*) Denotes p-value <0.05 according to chi-square analysis of procedure proportions.

CPT Code	Procedure Description	Total	Darrach	Sauvé-Kapandji
25310	Tendon transplantation or transfer, single	154	127	27
25337	Reconstruction of unstable DRUJ	91	85	6
64721	Neuroplasty and/or transposition of median nerve at carpal tunnel	81	64	17
20680	Removal of implant	63	53	10
64772	transection or avulsion of peripheral nerve	61	52	9
29846	Arthroscopy, wrist w/ excision of triangular fibrocartilage and or joint debridement	57	53	4
25810	Arthrodesis, wrist w/ iliac or other autograft	55	50	5
25107	Arthrotomy, DRUJ for repair of triangular cartilage complex	47	47	0
25116	Radical excision of extensor bursa, synovia	37	34	3
26480	Tendon transfer or transplant to CMC area or dorsum of hand, single, without free graft	37	35	2
26497	Tendon transfer to restore intrinsic function of ring or small finger	34	28	6
25825	intercarpal (wrist) fusion, with autograft	15	13	2
25215	carpectomy, all bones of proximal row	15	14	1

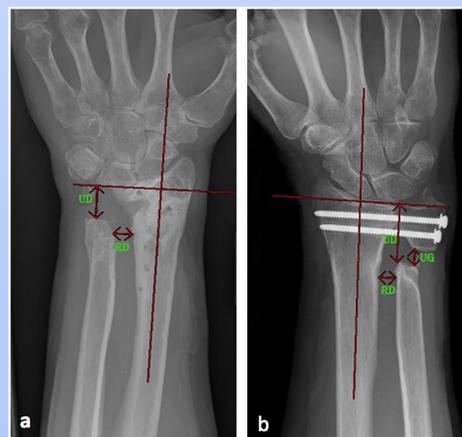
**Table 3. Concurrent procedures for patients undergoing Darrach and Sauvé-Kapandji procedures.** Secondary procedures were identified based on CPT code for a given Darrach or Sauvé-Kapandji encounter. CPT= current procedural terminology; DRUJ= distal radioulnar joint; CMC=carpometacarpal.

## Conclusions:

1. Darrach procedures are more common than Sauvé-Kapandji procedures
2. Younger (< 35) and male patients are more likely to undergo Sauvé-Kapandji procedures
3. Other demographic factors (income and insurance status) do not influence procedure choice
4. Primary osteoarthritis is the most common indication for these procedures
5. Secondary procedures are often necessary and commonly include tendon/nerve manipulation

## References

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**Figure 1. Example postoperative radiographs of a) Darrach and b) Sauvé-Kapandji procedures.** Adapted from Verhiel et al. (2019).<sup>1</sup>

		Procedure Name				p-value
		Darrach		Sauvé-Kapandji		
		%	Count	%	Count	
<b>RA</b>	Male	15.0%	19	15.0%	3	
	Female	85.0%	108	85.0%	17	
<b>Primary OA</b>	Male	39.7%	141	52.6%*	50	.024
	Female	60.3%*	214	47.4%	45	.047
<b>Post-traumatic OA</b>	Male	37.9%	25	64.3%	9	
	Female	62.1%	41	35.7%	5	

**Table 2. Underlying wrist pathology for Darrach and Sauvé-Kapandji procedures.** RA= rheumatoid arthritis; OA= osteoarthritis. (\*) Denotes p-value <0.05 according to chi-square analysis of procedure proportions.