

TABLE E-1 Study and Patient Demographic Information*

Source	Type of Study	Level of Evidence	Total No.	No. Evaluated	Effective Follow-Up	Dominant Arm	Mean Age (yr)	Mean Follow-Up (mo)	Percentage Male	Symptom Onset (mo)	Small Tear (<1 cm)	Medium Tear (1 to 3 cm)	Large Tear (>3 to 5 cm)	Massive Tear (>5 cm)	Single Tendon	Multiple Tendons
Arthroscopic																
Ide et al. ³⁴ (2005)	Retrospective cohort study	3	50	50	100.0%	62.0%	57.0	41.0	82.0%	8.0	10.0%	56.0%	18.0%	16.0%	NR	NR
Kim et al. ⁵⁸ (2003)	Retrospective cohort study	3	42	42	92.7%	88.0%	55.0	39.0	64.0%	NR	0.0%	54.8%	45.2%	0.0%	NR	NR
Severud et al. ⁵⁹ (2003)	Retrospective cohort study	3	35	35	78.0%	NR	58.7	38.4	60.0%	10.8	8.6%	65.7%	25.7%	0.0%	NR	NR
Warner et al. ⁶⁰ (2005)	Retrospective cohort study	3	13	9	69.2%	89.0%	53.0	44.0	56.0%	9.0	NR	NR	NR	NR	100%	0%
Youm et al. ⁶¹ (2005)	Retrospective cohort study	3	42	42	88.4%	NR	57.9	35.2	NR	NR	50.0%	21.4%	28.6%	0.0%	NR	NR
Bennett ⁷ (2003)	Case series	4	37	24	64.9%	79.0%	59.8	24.0	58.0%	NR	NR	NR	NR	NR	100%	0%
Boileau et al. ⁶² (2005)	Case series	4	85	65	76.5%	77.0%	60.0	29.0	49.0%	26.0	49.2%	47.7%	3.1%	0.0%	NR	NR
Gartsman et al. ²³ (1998)	Case series	4	78	73	93.6%	71.0%	60.7	30.0	53.0%	18.0	15.1%	61.6%	15.1%	8.2%	NR	NR
Murray et al. ⁶³ (2002)	Case series	4	53	48	90.6%	67.0%	57.6	39.0	69.0%	10.6	NR	NR	NR	NR	65%	45%
Park et al. ⁵⁷ (2004)	Case series	4	20	20	91.3%	79.0%	55.0	34.0	60.0%	30.0	15.0%	40.0%	20.0%	25.0%	NR	NR
Wilson et al. ²⁷ (2002)	Case series	4	65	65	100.0%	NR	52.0	48.0	58.0%	11.5	NR	30 (<2 cm)	32 (2 to 4 cm)	3 (>4 cm)	NR	NR
Mini-open																
Ide et al. ³⁴ (2005)	Retrospective cohort study	3	50	50	100.0%	78.0%	57.1	56.4	78.0%	6.4	4.0%	70.0%	16.0%	10.0%	NR	NR
Kim et al. ⁵⁸ (2003)	Retrospective cohort study	3	34	34	92.7%	85.0%	58.0	39.0	65.0%	NR	0.0%	61.8%	38.2%	0.0%	NR	NR
Severud et al. ⁵⁹ (2003)	Retrospective cohort study	3	29	29	78.0%	NR	63.3	52.0	62.0%	15.7	3.4%	34.5%	62.1%	0.0%	NR	NR
Warner et al. ⁶⁰ (2005)	Retrospective cohort study	3	20	12	60.0%	100.0 %	55.0	55.0	67.0%	12.0	NR	NR	NR	NR	100%	0%
Youm et al. ⁶¹ (2005)	Retrospective cohort study	3	42	42	88.4%	NR	60.0	37.6	NR	NR	40.5%	54.8%	4.8%	0.0%	NR	NR
Boszotta and Prunner ⁷¹ (2004)	Case series	4	100	84	84.0%	NR	54.8	35.0	NR	(3 to 14)	NR	NR	NR	NR	83%	17%
Hersch and Sgaglione ⁸² (2000)	Case series	4	25	22	88.0%	77.0%	56.0	39.0	64.0%	10.0	0.0%	54.5%	22.7%	22.7%	NR	NR
Liu and Baker ¹¹ (1994)	Case series	4	48	35	72.9%	70.0%	63.0	44.0	42.0%	>6	34.3%	28.6%	37.1%	0.0%	NR	NR
Liu ⁶⁸ (1994)	Case series	4	52	44	84.6%	66.0%	58.0	50.4	44.0%	NR	17.8%	37.8%	33.3%	11.1%	NR	NR
Paulos and Kody ¹² (1994)	Case series	4	21	18	86.0%	72.0%	47.2	48.0	78.0%	(3 to 60)	35.3%	47.1%	17.6%	0.0%	NR	NR
Shinners et al. ¹⁴ (2002)	Case series	4	63	41	65.1%	68.0%	51.0	36.0	73.0%	NR	19.5%	68.3%	12.2%	0.0%	NR	NR

*NR = not recorded.

TABLE E-2 Surgical Technique and Concomitant Procedures*

Source	Surgical Technique	Points of Fixation†	Method of Fixation	Subacromial Decompression	Acromioclavicular Joint	Biceps Tendon	Labrum‡	Other
Arthroscopic								
Ide et al. ³⁴ (2005)	Arthroscopic	NR	Suture anchors	All	NR	NR	NR	NR
Kim et al. ⁵⁸ (2003)	Arthroscopic	NR	Suture anchors	All	NR	NR	NR	NR
Severud et al. ⁵⁹ (2003)	Arthroscopic	1.5	Suture anchors	All	4 coplane	NR	NR	NR
Warner et al. ⁶⁰ (2005)	Arthroscopic	NR	Suture anchors	All	NR	3 tenotomy	2 SLAP, 1 Bankart	NR
Youm et al. ⁶¹ (2005)	Arthroscopic	NR	Suture anchors	All	NR	NR	NR	NR
Bennett ⁷ (2003)	Arthroscopic	NR	Suture anchors	19	NR	NR	NR	NR
Boileau et al. ⁶² (2005)	Arthroscopic	2.25	Suture anchors (tension band)	61	4 distal clavicle excision	3 tenotomy, 53 tenodesis	NR	NR
Gartsman et al. ²³ (1998)	Arthroscopic	2.3	Suture anchors	All	7 distal clavicle excision	NR	NR	7 osteoarthritis
Murray et al. ⁶³ (2002)	Arthroscopic	NR	Suture anchors	All	39 distal clavicle excision	6 tenodesis	NR	NR
Park et al. ⁵⁷ (2004)	Arthroscopic	3	Suture anchors	All	1 distal clavicle excision	NR	NR	NR
Wilson et al. ²⁷ (2002)	Arthroscopic	1.86	Suture anchors	All	58 distal clavicle excision	NR	NR	NR
Mini-open								
Ide et al. ³⁴ (2005)	Mini-open	NR	Suture anchors (47)/transosseous tunnels (3)	All	NR	NR	NR	NR
Kim et al. ⁵⁸ (2003)	Mini-open	NR	Suture anchors	All	NR	NR	NR	NR
Severud et al. ⁵⁹ (2003)	Mini-open	NR	Transosseous tunnels	All	11 coplane	NR	NR	NR
Warner et al. ⁶⁰ (2005)	Mini-open	NR	Transosseous tunnels	All	1 distal clavicle excision	1 tenotomy	4 SLAP	1 capsular release
Youm et al. ⁶¹ (2005)	Mini-open	NR	Suture anchors	All	NR	NR	NR	NR
Boszotta and Prunner ⁷¹ (2004)	Arthroscopic assisted	(range, 2 to 3)	Transosseous tunnels	All	NR	NR	NR	NR
Hersch and Sgaglione ⁸² (2000)	Mini-open	NR	Transosseous tunnels	All	NR	NR	NR	NR
Liu and Baker ¹¹ (1994)	Mini-open	NR	Transosseous tunnels	All	NR	NR	NR	NR
Liu ⁶⁸ (1994)	Mini-open	NR	Transosseous tunnels	All	NR	NR	NR	NR
Paulos and Kody ¹² (1994)	Mini-open	NR	Transosseous tunnels +/- suture anchors	All	NR	2 débridement	5 débridement	2 glenohumeral débridement
Shinners et al. ¹⁴ (2002)	Mini-open	NR	Transosseous tunnels	All	17 distal clavicle excision	NR	NR	NR

*NR = not recorded. †The values are expressed as the mean, unless indicated otherwise. ‡ SLAP = superior labrum anterior posterior complex.

TABLE E-3 Rehabilitation Protocols

	Sling	Pendulum	Passive Range of Motion	Range of Motion		Strength	Activity
Source				Active-Assisted	Active		
Arthroscopic							
Ide et al. ³⁴ (2005)	Abduction pillow and sling	NR	NR	Weeks 2 to 4: stick	NR	Week 6 to 9	NR
Kim et al. ⁵⁸ (2003)	Abduction pillow and sling \times 3 weeks	Postoperative days 3 to 5	Week 3: rope and pulley	Week 3: rope and pulley	NR	NR	Month 4
Severud et al. ⁵⁹ (2003)	Shoulder immobilizer	NR	Post-anesthesia care unit: frontal plane and external rotation arc	Week 4: supine	NR	Week 12: resistive exercises	NR
Warner et al. ⁶⁰ (2005)	Sling	NR	Post-anesthesia care unit	NR	Week 4	Week 12	Month 4
Youm et al. ⁶¹ (2005)	Sling	NR	Post-anesthesia care unit	NR	Week 4 to 6: depending on size	NR	NR
Bennett' (2003)	Sling \times 3 weeks	Weeks 1 to 3	Week 3	Week 6	Week 9	Week 6: external rotation internal rotation; Week 9: forward elevation	NR
Boileau et al. ⁶² (2005)	60° abduction sling \times 3 Weeks, 30° abduction sling \times 3 weeks	Post-anesthesia care unit	Week 3: scapular plane	NR	After complete recovery of passive range of motion	NR	NR
Gartsman et al. ²³ (1998)	15° abduction sling and ice wrap	NR	Post-anesthesia care unit: passive forward elevation, external rotation	NR	Week 6	NR	Month 3
Murray et al. ⁶³ (2002)	Sling \times 3 weeks	Week 2	NR	Week 3 to 4: active-assisted range of motion in pool	Week 1: elbow, wrist, hand. Week 3 to 4: pulley and cane	Week 7 to 12: graduated rotator cuff and deltoid, sports/work strengthening	NR
Park et al. ⁵⁷ (2004)	Sling \times 6 weeks	NR	Post-anesthesia care unit	NR	Week 6: supine forward elevation to sitting forward elevation	NR	NR
Wilson et al. ²⁷ (2002)	20° shoulder sling	NR	Post-anesthesia care unit: abduction 45° to 90°	NR	Week 1: elbow, wrist	Week 6	NR
Mini-open							
Ide et al. ³⁴ (2005)	Abduction pillow and sling	NR	NR	Week 2 to 4: stick	NR	Week 6 to 9	NR
Kim et al. ⁵⁸ (2003)	Abduction pillow and sling \times 3 weeks	Postoperative days 3 to 5	Week 3: rope and pulley	Week 3: rope and pulley	NR	NR	Month 4
Severud et al. ⁵⁹ (2003)	Shoulder immobilizer	NR	Post-anesthesia care unit: frontal plane and external rotation arc	Week 4: supine	NR	Week 12: resistive exercises	NR
Warner et al. ⁶⁰ (2005)	Sling	NR	Post-anesthesia care unit	NR	Week 4	Week 12	Month 4
Youm et al. ⁶¹ (2005)	Sling	NR	Post-anesthesia care unit	NR	Week 4 to 6: depending on size	NR	NR
Boszotta and Prunner ⁷¹ (2004)	Abduction pillow	NR	Post-anesthesia care unit: limited	NR	Week 4: controlled active range of motion, no rotation for 6 Weeks	NR	Month 3
Hersch and Sgaglione ⁸² (2000)	Sling	NR	Post-anesthesia care unit: forward elevation and external rotation	NR	Week 4 to 6	Week 6 to 8	Month 6
Liu and Baker ¹¹ (1994)	45° abduction splint \times 3 weeks, sling \times 3 weeks	Post-anesthesia care unit	Post-anesthesia care unit: protected passive range of motion	NR	Week 6	Week 6	NR
Liu ⁶⁸ (1994)	45° abduction splint \times 3 weeks, sling	NR	Post-anesthesia care unit	Week 4	NR	Week 6: resistive exercise	Month 3 to 4
Paulos and Kody ¹² (1994)	Sling \pm abduction pillow	NR	Post-anesthesia care unit	NR	After sling removed	Week 6	NR
Shinners et al. ¹⁴ (2002)	Abduction pillow	NR	Post-anesthesia care unit: elbow, wrist, cervical spine	Week 3	NR	NR	NR

NR = not recorded.

TABLE E-4 Range of Motion*

Source	Forward Elevation (deg)			External Rotation (deg)		
	Preop.†	Postop.†	P Value	Preop.†	Postop. †	P Value
Arthroscopic						
Ide et al. ³⁴ (2005)	NR	NR	NR	NR	NR	NR
Kim et al. ⁵⁸ (2003)	NR	NR	NR	NR	NR	NR
Severud et al. ⁵⁹ (2003)	NR	NR	NR	NR	NR	NR
Warner et al. ⁶⁰ (2005)	145.0 (range, 120 to 160)	160.0 (range, 130 to 170)	p = 0.50 (compared with mini-open)	50.0 (range, 40 to 60)	50.0 (range, 30 to 60)	p = 0.97 (compared with mini-open)
Youm et al. ⁶¹ (2005)	NR	NR	NR	NR	NR	NR
Bennett ⁷ (2003)	NR	NR	NR	NR	NR	NR
Boileau et al. ⁶² (2005)	NR	NR	NR	NR	NR	NR
Gartsman et al. ²³ (1998)	135.0 ± 22.0	149.0 ± 4.0	p = 0.0001	66.0 ± 12.0	78.0 ± 10.0	p = 0.0001
Murray et al. ⁶³ (2002)	157.2 ± 34.1	169.6 ± 9.1	NR	80.1 ± 18.5	85.7 ± 8.5	NR
Park et al. ⁵⁷ (2004)	107.0	159.0	NR	53.0	82.0	NR
Wilson et al. ²⁷ (2002)	NR	NR	NR	NR	NR	NR
Mini-open						
Ide et al. ³⁴ (2005)	NR	NR	NR	NR	NR	NR
Kim et al. ⁵⁸ (2003)	NR	NR	NR	NR	NR	NR
Severud et al. ⁵⁹ (2003)	NR	NR	NR	NR	NR	NR
Warner et al. ⁶⁰ (2005)	150.0 (range, 30 to 160)	155.0 (range, 110 to 170)	p = 0.50 (compared with arthroscopic)	50.0 (range, 30 to 50)	50.0 (range, 25 to 60)	p = 0.97 (compared with arthroscopic)
Youm et al. ⁶¹ (2005)	NR	NR	NR	NR	NR	NR
Boszotta and Prunner ⁷¹ (2004)	NR	NR	NR	NR	NR	NR
Hersch and Sgaglione ⁸² (2000)	130.0	164.0	p = 0.0034	54.0	66.0	p = 0.0142
Liu and Baker ¹¹ (1994)	110.0	157.0	NR	37.0	50.0	NR
Liu ⁶⁸ (1994)	110.0	157.0	p < 0.05	37.0	50.0	p < 0.05
Paulos and Kody ¹² (1994)	NR	NR	NR	NR	NR	NR
Shinners et al. ¹⁴ (2002)	151.0	173.0	p < 0.0023	NR	NR	NR

*NR = not recorded. †The values are given as the mean, the mean with the range in parentheses, or the mean and the standard deviation.

TABLE E-5 Clinical Outcomes*

Source	Percentage of Good/Excellent UCLA Scores†	P Value	UCLA Score† (points)			ASES Score§ (points)			Satisfaction
			Preop.‡	Postop.‡	P Value	Preop.‡	Postop.‡	P Value	
Arthroscopic									
Ide et al. ³⁴ (2005)	NR	NR	16.1 (range, 8 to 24)	32 (range, 21 to 35)	p > 0.05 (compared with mini-open)	NR	NR	NR	NR
Kim et al. ⁵⁸ (2003)	90%	NR	19 ± 4.3	33 ± 2.8	p < 0.001 (compared with mini-open)	61 ± 16	95 ± 7.2	p < 0.001	NR
Severud et al. ⁵⁹ (2003)	91%	NR	NR	32.6	p > 0.05 (compared with mini-open)	NR	91.7	p > 0.05 (compared with mini-open)	NR
Warner et al. ⁶⁰ (2005)	NR	NR	NR	NR	NR	NR	NR	NR	NR
Youm et al. ⁶¹ (2005)	95%	P = 0.01 (compared with mini-open)	NR	33.2 ± 2.5	p > 0.05 (compared with mini-open)	NR	91.1 ± 15.4	p > 0.05 (compared with mini-open)	100.0%
Bennett ⁷ (2003)	NR	NR	NR	NR	NR	30 ± 16	83 ± 21	p = 0.001	NR
Boileau et al. ⁶² (2005)	92%	NR	11.5 ± 1.1	32.3 ± 1.3	p < 0.001	NR	NR	NR	95.0%
Gartsman et al. ²³ (1998)	84%	NR	12.4 ± 4.2	31.1 ± 3.2	p = 0.0001	30.7 ± 15.7	87.6 ± 12.8	p = 0.0001	90.0%
Murray et al. ⁶³ (2002)	96%	NR	17.2 ± 2.8	33.7 ± 3	p = 0.001	42.2 ± 14.1	94.9 ± 12.1	p = 0.001	98.0%
Park et al. ⁵⁷ (2004)	NR	NR	NR	NR	NR	29	88	NR	NR
Wilson et al. ²⁷ (2002)	91%	NR	21.1	32.5 (range, 16 to 35)	NR	NR	NR	NR	90.0%
Mini-open									
Ide et al. ³⁴ (2005)	NR	NR	15.5 (range, 7 to 26)	31.6 (range, 26 to 35)	p > 0.05 (compared with arthroscopic)	NR	NR	NR	NR
Kim et al. ⁵⁸ (2003)	82%	NR	18 ± 2.6	33 ± 3.4	p < 0.001 (compared with arthroscopic)	59 ± 12	95 ± 7.3	p < 0.001	NR
Severud et al. ⁵⁹ (2003)	93%	NR	NR	31.4	p > 0.05 (compared with arthroscopic)	NR	90	p > 0.05 (compared with arthroscopic)	NR
Warner et al. ⁶⁰ (2005)	NR	NR	NR	NR	NR	NR	NR	NR	NR
Youm et al. ⁶¹ (2005)	98%	p = 0.01 (compared with arthroscopic)	NR	32.3 ± 3.3	p > 0.05 (compared with arthroscopic)	NR	90.2 ± 14.8	p > 0.05 (compared with arthroscopic)	98.0%
Boszotta and Prunner ⁷¹ (2004)	NR	NR	11.3	31.1	p < 0.001	NR	NR	NR	NR
Hersch and Sgaglione ⁶² (2000)	82%	NR	NR	31	NR	NR	81	NR	86.0%
Liu and Baker ¹¹ (1994)	86%	NR	10.5	32.7	NR	NR	NR	NR	93.0%
Liu ⁶³ (1994)	82%	NR	10.5	32.7	p = 0.001	NR	NR	NR	88.0%
Paulos and Kody ¹² (1994)	88%	NR	NR	30.3 (range, 12 to 35)	NR	NR	NR	NR	94.0%
Shinners et al. ¹⁴ (2002)	93%	NR	NR	32.3	NR	NR	NR	NR	100.0%

*NR = not recorded. †UCLA = University of California at Los Angeles Shoulder Score. ‡The values are given as the mean, the mean with the range in parentheses, or the mean and the standard deviation. §ASES = American Shoulder and Elbow Surgeons Shoulder Score.

TABLE E-6 Complications*

Source	Revision Rotator Cuff Repair	Arthrofibrosis	Bicep Tendon Rupture	Fascial Nerve Palsy	Deep Infection	Superficial Infection	Hematoma /Seroma	Hypertrophic Scar	Further Impingement	Heterotopic Ossification	Skin Hypersensitivity
Arthroscopic											
Ide et al. ³⁴ (2005)	1	0	0	0	0	0	0	0	0	0	0
Kim et al. ⁵⁸ (2003)	0	0	0	0	0	0	0	0	0	0	1
Severud et al. ⁵⁹ (2003)	0	0	1	0	1	0	0	0	0	0	0
Warner et al. ⁶⁰ (2005)	0	1	0	0	0	0	0	0	0	0	0
Youm et al. ⁶¹ (2005)	1	2	0	0	0	0	0	0	0	0	0
Bennett ⁷ (2003)	1	0	0	0	0	0	2	0	0	0	0
Boileau et al. ⁶² (2005)	0	1	0	0	0	0	0	0	0	0	0
Gartsman et al. ²³ (1998)	0	0	0	0	0	0	0	0	0	0	0
Murray et al. ⁶³ (2002)	0	1	0	0	0	0	0	0	1	0	0
Park et al. ⁵⁷ (2004)	0	0	0	1	0	0	0	0	0	0	0
Wilson et al. ²⁷ (2002)	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mini-open											
Ide et al. ³⁴ (2005)	0	0	0	0	0	0	0	0	0	0	0
Kim et al. ⁵⁸ (2003)	0	0	0	0	0	0	0	2	0	0	0
Severud et al. ⁵⁹ (2003)	1	4	0	0	0	0	0	0	0	0	0
Warner et al. ⁶⁰ (2005)	0	2	0	0	0	0	0	0	0	0	0
Youm et al. ⁶¹ (2005)	3	0	0	0	0	0	0	0	0	0	0
Boszotta and Prunner ⁷¹ (2004)	0	1	0	0	0	0	1	0	0	0	0
Hersch and Sgaglione ⁸² (2000)	0	0	0	0	0	0	0	0	3	1	0
Liu and Baker ¹¹ (1994)	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Liu ⁶⁸ (1994)	0	2	0	0	0	1	0	0	2	0	0
Paulos and Kody ¹² (1994)	1	0	0	0	0	1	0	0	0	0	0
Shinners et al. ¹⁴ (2002)	1	0	0	0	0	0	0	0	1	0	0

*NR = not recorded.