

Supplementary File 9. Characteristics of studies reporting on the association between explantation of breast implants and course of rheumatic diseases

Study (Year) Location, study period	Population / Rheumatic disease	No. improved / No. with explantation	Details on outcomes after explantation	Time to improvement	Follow-up time available	\$
Melmed (1998) United States, 3 years	Women with SBI followed in plastic surgery after explantation (196 had symptomatic complaints)	-/240 (74%)	74% felt much better Immediate improvement, but 20% relapse after 2-3 months	Immediate but <u>temporary</u>	-	NR
	Chronic fatigue	116/166 (70%)	116 improved, 36 same, 14 worse	-	-	
	Arthralgias	22/102 (22%)	22 improved, 50 same, 30 worse No significant improvement in arthralgias of "major joints"	-	-	
	Flu-like symptoms	92/122 (75%)	92 improved, 27 same, 3 worse	-	-	
	Dry eyes	-/-	"Improved rapidly"	-	-	
Cuellar et al. (1995) United States, 1991-1992	Consecutive women with SBI referred to rheumatology for rheumatic symptoms	65/93 (70%)	"Definite clinical improvement"	-	-	NR
	Rheumatoid arthritis	2/-	"Dramatic clinical improvement"	-		
	Diffuse scleroderma	1/-	"Dramatic clinical improvement"	-		
	Fibromyalgia / chronic fatigue syndrome	-/-	"Less dramatic" improvement	> 6 months to one year		
Peters et al. (1997) Canada, 1992-1995	Women with SBI followed in plastic surgery after explantation who responded to questionnaire (75%)	56/75 (74%)	"Felt better"	-	2.7 years (mean), 1-5 years (range)	Yes
	Breast firmness or pain, fear of possible side effects, fatigue, joint pain, gastrointestinal symptoms, rashes, memory loss, sleep disturbances	-/57 (>80%)	Major improvement in symptoms	-	-	
	Inflammatory arthritis (2) / fibromyalgia (10)	1/12	1 slight improvement, 11 no change or worse (6 "totally disabled") "Most experienced an initial, almost euphoric improvement in symptoms" in first few months, but symptoms <u>recurred</u> in all patients over the subsequent 6-12 months	> 1 year (n=1)	2.7 years (mean)	
	Systemic lupus erythematosus (2), rheumatoid arthritis (2), Raynaud's disease (1), multiple sclerosis (1)	0/6	All had further deterioration in clinical status; no improvement in autoantibody levels	-	2.7 years (mean)	
Svahn et al. (1996) United States, 1992 forward	Consecutive females with SBI explantation who responded to survey (63%); 43/63 (69%) had symptoms or signs suggestive of connective tissue disease (self-reported)	49/63 (78%)	49 improved, 12 same, 2 worse (in quality of life and symptoms, including breast and/or musculoskeletal pain)	-	6-12 months	NR
Colaris et al. (2017) Netherlands, Jan-Oct 2014	Consecutive patients with SBI fulfilling the Schoenfeld's criteria for the diagnosis of ASIA	27/54 (50%)	"Symptoms such as fatigue, arthralgia, myalgia, sicca and pyrexia improved in most patients after explantation", but 7/27 <u>temporary</u> improvement	-	Several weeks	No
Maijers et al. (2013) Netherlands, 2012-2013	80 women with SBI recruited through national media with unexplained systemic symptoms (including fatigue, arthralgia, myalgia, morning stiffness and other symptoms; 1 scleroderma, 1 systemic lupus erythematosus, 2 Sjögren's disease)	36/52 (69%)	69% had significant decrease in symptoms; 9/36 had complete disappearance of symptoms	-	7 months (median), 1 month to 18 years	NR
Rohrich et al. (2000) United States, 1996-1998	Consecutive patients with SBI referred to plastic surgery with safety concerns; none had documented rheumatic diseases	/38	"Temporary decrease in musculoskeletal symptoms and bodily pain" Number of musculoskeletal symptoms (0 to 18): mean 7.8 / 6.7 / 5.5 at pre-op / 6 weeks post-op / 6 months post-op	-	6 weeks and 6 months	No
Godfrey and Godfrey (1996) United States, 1991-1994	Consecutive patients with breast implants (reconstruction) and systemic symptoms (including fatigue, myalgia, arthralgia, Raynaud's, dry eye/mouth and others)	12/37 (32%)	89% improved at 1 month, but only 32% improved at 6 months (gradual return of symptoms)	1 month (<u>temporary</u>)	6-27 months	NR
Solomon (1994) United States, 10 months	Women with SBI referred to rheumatology by attorneys or physicians for rheumatic symptoms	16/36 (44%)	"Significant improvement"	> 6 months	Weeks-months	NR
Kappel and Pruijn (2012) Netherlands	Women followed in plastic surgery with explantation of SBI and replacement with hydrocellulose filled implant Symptoms (arthralgias, myalgias, fatigue, burning eye sensations) in 20-50%	-/22 with capsulectomy, -/13 without capsulectomy	With capsulectomy: improved myalgias (p<0.01), arthralgias (p<0.01), fatigue (p<0.01), burning eyes (p<0.05); Without capsulectomy: improved arthralgias (p<0.05), fatigue (p<0.01), burning eyes (p<0.05), but not myalgias	-	3-3.5 years (mean)	NR

Vasey et al. (1994) United States, 1997-1991	Women with SBI referred to rheumatology for rheumatic symptoms (not consecutive)	24/33 (73%)	4 resolved, 13 improved off treatment, 7 improved on treatment, 8 unchanged, 1 worse	–	–	No
	Systemic sclerosis	2/2	1 hypertensive crisis improved on concomitant captopril	–	–	
	Systemic lupus erythematosus	1/1	“Resolved”	–	5 years	
	Mixed connective tissue disease	1/1	Reduced prednisone and hydroxychloroquine	–	–	
	Rheumatoid arthritis-like disease	0/–	1 controlled on oral gold, 1 improved after methotrexate, 1 worsened 12 months after	–	–	
	Fibromyalgia/polyarthralgia	3/–	Symptom resolution	–	–	
Wallace et al. (1996) United States, before 1994	Patients with SBI followed by rheumatologist for systemic lupus erythematosus or systemic sclerosis	–/26 (majority)	“ <u>Transient</u> subjective improvement was common in the majority of patients”	–	–	No
	Systemic lupus erythematosus with SBI	–/16	2 had all symptoms, signs and autoantibodies disappear within 60 days, in remission after 2 years of follow-up	60 days (n=2)	2 years (n=2)	
	Systemic sclerosis with SBI	–/10	1 developed hypertension and scleroderma kidney, dialysis within 2 months of explantation	–	–	
Thomas et al. (1997) United States, 1992-1994	Consecutive females with SBI referred to plastic surgery for explantation; 21/25 due to mastodynia, fatigue, arthralgia, fibromyalgia, sicca, hypesthesia, amblyopia; 4/25 due to safety concerns but minimally symptomatic	24/25 (96%)	- Subjective improvement - Satisfaction: 5 completely, 18 very, 1 somewhat, 1 not - 5/25 required revision due to: mastodynia (1), superficial infection (1), deep infection (2), scar contracture (1), implant dislocation (1)	Months	24 months (mean), 4-42 months (range)	NR

NOS: Newcastle-Ottawa scale (range 0 to 9); NR or –: not reported; SBI: silicone breast implant; \$: potential financial or other conflict of interest.