

**Supplementary Table 2: Psychological & Quality of Life Outcomes Following Pectus Repair**

Year	Study	Design	Patient Demographics	Mean Haller Index	Follow up (months)	Outcomes (Assessment tool)	Results
2022	Norlander	Cross-sectional study Multicentre	n = 236	NR	NR	Specific HRQoL (modified Nuss Questionnaire)	Comparison to pre-op/unoperated patients, found significantly better HRQoL in patients who had surgery at a younger age.
2019	Zuidema	Prospective cohort study Uncontrolled Single centre	n = 127 Age 16.2± 2 Nuss	3.9± 1.4	12	Sports activity (CHQ, SF-36 and PEEQ)	No significant change in participation in sport (67% vs 65%) one year after surgery. Significant decrease in post-operative physical complaints during sports activity (p < 0.001).
2019	Wachter	Prospective cohort study Uncontrolled Single centre	n = 18 Age 20± 2 Nuss	NR	58	Aesthetic and psychological outcome (local questionnaire)	Patients rated their disease as more severe than medical professionals pre-operatively. Significant improvement in self-perception and psychological wellbeing post bar removal.
2017	Luo	Prospective cohort study Uncontrolled Single centre	n = 266 Age 19 ± 4 Nuss	4.1 ± 1	12	Psychiatric and psychological symptoms (SCL-90) Depressive illness (SDS)	Significant reduction in mental health problems from 161 (60.53%) to 79 (29.70%) (P<0.001). Significant reduction in depressive illness from 153 (57.52%) to 76 (28.57%) (p <0.001).
2017	Bahadir	Prospective study <b>Controlled</b> Single centre	n = 63 (32 operated / 31 controls) Age NR NR	NR	6	Psychiatrics and psychological symptoms (CDI, SDQ)	No significant difference between operated and un-operated patients.
2016	Lomholt	Prospective cohort study Controlled (age matched healthy controls) Single centre	n = 107 Age 15±2 Nuss	NR	12	Generic HRQoL (CHQ)	Comparable overall HRQoL pre-operatively to that of health controls w/ exception of perceived physical functioning (P< 0.0001). Significant improvement improved emotional wellbeing and self-esteem, as well as an increase in physical and social activities from pre- to post-surgery (P<0.001).
2016			n = 39	4.3 ± 1.3	40	Patient satisfaction	Patient satisfaction of 82%.

	Sacco Casamassima	Retrospective case series Single centre	Age 30 (21 to 55.) Nuss			Specific HRQoL (mNuss Questionnaire)	90% self-reported improvement in general health, exercise tolerance and social interaction.
2016	Kuru	Prospective cohort study Uncontrolled Single centre	n = 88 Age 18 ± 4 Nuss	4.04 ± 1.34	6	Disease specific HRQoL (mNuss Questionnaire) Psychosocial functioning	Median scores of 31 (31-35) to 43 (43-46) (P<0.001).  Psychosocial functioning: median, interquartile range): pre-surgery 22.5 (19 to 25), 6 months post-surgery 33 (30-35) ) (P<0.001).
2011	Kim	Prospective cohort study Uncontrolled Single centre	n = 39 Age 7 ± 3 Nuss	NR	42	Patient satisfactions and social wellbeing pre-operatively, post-operatively and post Nuss bare removal (non-validated local questionnaire)	Significant increase in satisfaction and social participation post operatively sustained post bar removal.
2011	Hadolt	Prospective cohort study Uncontrolled Single centre	n = 17 Age 19±2.5 Nuss	NR	48	Operative expectations (OPE Questionnaire) Body Image (FKKS) Psychiatric and psychological symptoms (SCL-90)	Expectations were meant in 82% of cases.  Significant improvement.  Pre-operatively patient scores were within the normal range however there were significant improvements in depression (P<0.05), Global severity index (P<0.03) and positive symptom distress burden (P<0.05) within this range.
2011	Bostanci	Prospective cohort study Uncontrolled Single centre	n = 140 Age 16 (6-35) Nuss	NR	30	Disease specific HRQoL (mNuss Questionnaire) Patient satisfaction	Statistically significant improvement (P<0.0001) on the overall quality of life, both in psychosocial (P<0.0001) and physical (P<0.0001) components. Patient satisfaction was 95%.

2010	Jacobson	Prospective cohort study Controlled Single centre	n = 119 271 controls Age (8-20)	NR	12	Generic HRQoL (CHQ)	Significantly better scores in family participation and mental health versus healthy controls.
2008	Kelly	Prospective cohort study Uncontrolled Multicentre	n = 326 Age (8-21) 291 parents Nuss (283) / Ravitch (43)	4.4± 1	12	Disease specific HRQoL (Nuss Questionnaire)	No correlation between degree of severity (PSI) and physical or psychosocial difficulties. Patients: Body image, physical difficulties significantly improved postoperatively. Parents: Emotional, social and physical difficulties significantly improved postoperatively.
2008	Lam	Retrospective cohort study Uncontrolled Single centre	n = 43 Age 15 ± 2 Ravitch 22 / Nuss 19	4.0 ± 0.9	15	Generic HRQoL (CHQ) Disease specific HRQoL (Nuss Questionnaire)	No significant difference in HRQL outcomes between Nuss and Ravitch procedures. Post-operatively reported lower CHQ scores relative to normative population.
2007	Metzelder	Prospective cohort study Uncontrolled Single centre	n = 44 Age 13.5 (6-20) Nuss	NR	54	Disease specific HRQoL (Nuss Questionnaire) Patient satisfaction	Significant improvement of psychosocial and physical well-being after bar implantation, which persisted up to 4 years after bar removal (p < 0.001). Patient satisfaction was 94%.
2006	Krasopoulos	Prospective cohort study Uncontrolled Single centre	n = 20 Age 18 (14-27) Nuss	NR	5	Disease specific HRQoL (mNuss Questionnaire)	Statistically significant improvement (p=0.001) in social function, self-esteem and a high level of satisfaction following the Nuss procedure. Statistically significant improvement only for the degree of dyspnoea (question 15, p = 0.005).

2003	Lawson	Prospective cohort study Uncontrolled Single centre	n = 19 Age (8-18) Nuss	NR	12	Disease specific HRQoL (Nuss Questionnaire)	Significant improvements in body image, exercise intolerance, shortness of breath, and tiredness and frequency of the child being frustrated, sad, self-conscious, and isolated by both patients and parents.
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NR indicates Not recorded; QoL; Quality of Life; HRQoL; Health related quality of life; CHQ; Children's health questionnaire; SF-36; Short Form-36; PEEQ; Pectus Excavatum Evaluation Questionnaire; SDS, Self-rating depression scale; SDQ, Strengths and difficulties questionnaire; SCL-90, Symptom checklist-90; FKKS, Frankfurt body concept scale