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Original research

The extent of improvement of health-related quality of life as assessed by the SF36 and Paseika scales after parathyroidectomy in patients with primary hyperparathyroidism – A systematic review and meta-analysis

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HIGHLIGHTS

- Parathyroidectomy for PHPT potentially improves function and quality of life.
- However, there is no quantitative evidence to support this for all studies.
- Provides evidence that parathyroidectomy improves the quality of life of PHPT patients.

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ABSTRACT

Background: Previous studies have shown that parathyroidectomy for primary hyperparathyroidism (PHPT) improve the function and quality of life of patients. The aim of this systematic review and meta-analysis is to determine the health-related quality of life outcomes among those having surgical management for PHPT. **Methods**: Several databases were searched (MEDLINE, EMBASE, PubMed, Current Contents) for studies in which health-related quality of life was measured by reliable and validated instruments (SF-36 and Paseika Questionnaire) before and after parathyroidectomy for patients with primary hyperparathyroidism (PHPT). For the SF-36, score differences greater than 5 points indicate clinically relevant changes. **Results**: There were six studies with quality of life data. The SF-36 data was derived from 238 patients, with a mean age of 59 years and 71% were females. The range of follow up after surgery was 6 months to one year. The pre- and post-parathyroidectomy SF-36 quality of life scale scores were vitality (44 vs. 60, $p < 0.001$), physical functioning (51 vs. 69, $p < 0.001$), bodily pain (50 vs. 65, $p < 0.001$), general health (54 vs. 64, $p < 0.001$), role physical (34 vs. 52, $p < 0.001$), role emotional (43 vs. 59, $p < 0.001$), role social (60 vs. 74, $p < 0.001$), and mental health (55 vs. 71, $p < 0.001$). The Paseika data was derived from 203 patients, with a mean age of 54 years and 67% were females. The pre- and post-parathyroidectomy Paseika scores were feeling tired (51 vs. 19, $p < 0.001$), feeling thirsty (29 vs. 12, $p < 0.001$), mood swings (33 vs. 12, $p < 0.001$), joint pains (32 vs. 14, $p < 0.001$), irritability (31 vs. 10, $p < 0.001$), feeling blue (31 vs. 14, $p < 0.001$), feeling weak (37 vs. 15, $p < 0.001$), itchy (17 vs. 7, $p < 0.001$), forgetful (27 vs. 16, $p < 0.001$), headache (18 vs. 5, $p < 0.001$), abdominal pain (19 vs. 8, $p < 0.001$), bone pain (38 vs. 17, $p < 0.001$), ability to move off chair (27 vs. 11, $p < 0.001$). **Conclusion**: Parathyroidectomy significantly improves the short to medium-term health-related quality of life of patients suffering from primary hyperparathyroidism.

1. Introduction

Primary hyperparathyroidism (PHPT) is a condition in which one or more of the parathyroid glands becomes autonomous and hyperactive. A patient with this endocrine disorder typically

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demonstrates increased serum calcium levels and inappropriately elevated parathyroid hormone levels.

Primary hyperparathyroidism (PHPT) occurs in 0.2%–0.5% of the population and is the most common cause of hypercalcemia in outpatients and second to cancer in the inpatient population [1]. Classic presentations of PHPT are: bone pain, nephrolithiasis, psychiatric disorders and gastrointestinal symptoms. Currently, most patients are diagnosed from a routine blood test and they have few or no specific symptoms [2].

Parathyroidectomy remains the treatment of choice for patients with PHPT accompanying obvious symptoms and complications. Patients with "asymptomatic" PHPT are often referred to those who report only subjective symptoms such as fatigue, irritability and mood swings and they remain to be the majority of cases [3]. The National Institute of Health (NIH) has developed guidelines for the surgical management of asymptomatic PHPT, but it has not included the effects of these symptoms on quality of life as an indication and parameter for parathyroidectomy [1,4].

Many patients state dramatic improvements in their sense of well-being and thus better quality of life following surgical correction of the disease [5]. Several studies have shown this by quantitatively and qualitatively describing the outcomes before and after the surgical procedure. However, the sample sizes are small and they use different instruments to measure outcomes. This paper aims to provide a systematic review and a meta-analysis of the health-related quality of life outcomes among patients who underwent parathyroidectomy for PHPT.

1.1. Quality of life assessment tools

Paseika and co-workers has developed Pasieka's parathyroid assessment of symptoms scores (PAS), which is a disease-specific surgical outcome tool [3,5–7]. Although not designed as a quality of life instrument per se, it evaluates several domains specific to PHPT. This standardized questionnaire explores 13 items that includes: bone pain, feeling tired, mood swings, feeling blue, abdominal pain, feeling weak, irritability, joint pains, forgetfulness, difficulty getting out of chair or car, headaches, itchy skin, and feeling thirsty. PAS uses a 100 mm visual analogue scale and is calculated as the sum of all 13 answers, with maximum possible score of 1300 [5].

SF-36 Health Survey is a well-recognized and validated quality of life questionnaire that measures eight different areas. This multidimensional self-administered 36-item instrument allows reproducible data that evaluates: physical functioning, social functioning, bodily pain, general health perceptions, vitality, role limitations due to emotional problems (role-emotional), role limitations due to physical health problems (role-physical) and mental health. Number of questions for each domain varies from 2 to 10. Scores range from 0 (poor health status) to 100 (best health status) [8,9] SF-36 is a useful tool for assessing patient outcomes after operation for hyperparathyroidism [14].

Pasieka's parathyroid assessment of symptoms scores (PAS) correlate with SF-36 questionnaire scores [10]. Both tools are reliable to identify symptomatic changes in patients with PHPT.

2. Methods

2.1. Study protocol

We followed the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. A systematic search of the databases MEDLINE, PubMed, EMBASE, and Current Contents from 1996 through to November 2014, to identify relevant articles. The search used the combination of keywords: (1) primary hyperparathyroidism; (2) parathyroidectomy; (3) health-related quality of life; (4) Pasieka; and (5) SF-36, which were searched as text word and as exploded medical subject headings where possible. The reference lists of relevant articles were also searched for appropriate studies. No language restrictions were used in either the search or study selection. A search for unpublished literature was not performed.

2.2. Study selection

We included studies that met the following inclusion criteria: (1) health-related quality of life measurement which uses either Paseika Health Questionnaire and or SF-36; (2) quantitative presentation of data; (3) pre- and post-operative comparison of scores. No restrictions were put on the study design, location, gender of patients, population size or language of publication. We excluded studies that did not meet the inclusion criteria.

2.3. Data extraction

The data extraction was performed using a standardized data extraction form, collecting information on the publication year, study design, number of cases, number of controls, total sample size, temporal direction, population type, country, continent, economic development, case control matching, mean age, number of adjusted variables, the risk estimates or data used to calculate the risk estimates, (confidence intervals) CIs or data used to calculate CIs, the scores of each parameter measured in both Paseika and SF-36. Quality of the studies was not assessed and authors were not contacted for missing data. Adjusted ratios were extracted in preference to non-adjusted ratios, however, where ratios were not provided, unadjusted (Odds Ratios) ORs and CIs were calculated. Where more than one adjusted ratio was reported, we chose the ratio with the highest number of adjusted variables. Where multiple risk estimates were available in the same study, for example due to the use of different comparator groups, they were included as separate risk estimates.

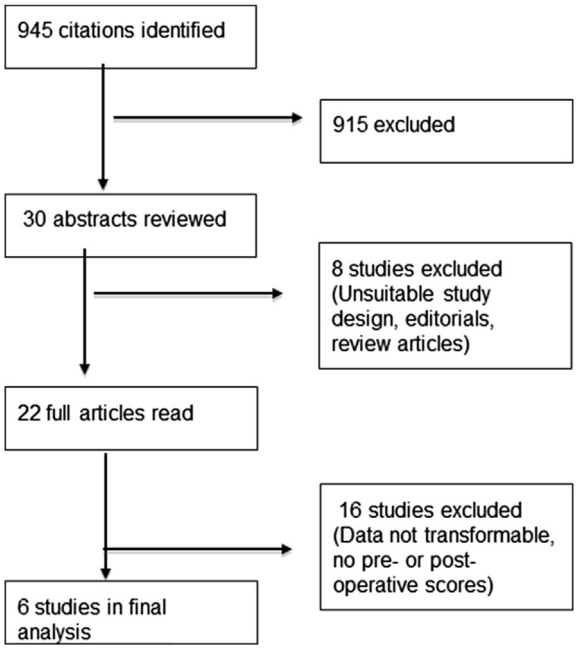

Fig. 1. Identification, inclusion and exclusion of studies in the meta-analysis.