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# Reversing the Irreversible: Complete Remission of Fibromyalgia

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**Abstract**

**Background:** Fibromyalgia (FM) has long been considered a chronic, incurable syndrome managed only through symptomatic treatments. Recent evidence, however, suggests that FM may be reversible in specific patient subgroups when underlying causes are identified and treated.

**Methods**: A comprehensive review of conventional and gray literature was conducted across PubMed, Scopus, Web of Science, Cochrane, and congress abstracts. Studies reporting complete remission of FM, defined as the loss of diagnostic criteria or discontinuation of all FM-related medications, were included. Data on interventions, patient characteristics, outcomes, and recurrence were extracted.

**Results**: Two main pathways to remission were identified. First, treating underlying disorders, especially primary hyperparathyroidism (pHPT), where parathyroidectomy led to complete remission in 21% of patients and significant improvement in 89%. Up to 11% of FM patients were later found to have undiagnosed pHPT. Second, direct therapeutic interventions: a gluten-free diet induced full remission in 75% of patients with

non-celiac gluten sensitivity, with reproducible relapse upon gluten re-exposure. A randomized trial of hyperbaric oxygen therapy (HBOT) showed 37.9% of patients no longer met FM criteria, versus 0% in controls. Additional isolated reports documented remission after bariatric surgery, detoxification protocols, and external Qigong neuromodulation.

**Conclusion**: FM is not invariably irreversible. In well-defined subgroups, identifying and targeting specific etiologies can lead to full remission, shifting the paradigm from symptom management to potentially curative care. Routine screening for endocrine, metabolic, and dietary factors is essential to achieving personalized treatment and improving long-term outcomes.

**Keywords:** Fibromyalgia, complete remission, hyperparathyroidism, parathyroidectomy, gluten-free diet, hyperbaric oxygen therapy, personalized medicine.

**Introduction**

Fibromyalgia (FM) is a heterogeneous clinical syndrome consisting of chronic widespread musculoskeletal pain, accompanied by fatigue, sleep disturbance, cognitive dysfunction, depressive symptoms and multiple objective signs of autonomic and neuroendocrine dysregulation. The global prevalence of FM is estimated at 2%-4% in the whole world's adult population, although it is more frequent in women from 30-60 years [1,2]. The etiopathogenesis of FM has yet to be fully elucidated, but recent findings suggest that it may be a multifactorial disorder involving central sensitization, alterations in pain neurotransmission, and dysregulation of the hypothalamic–pituitary–adrenal axis, along with subclinical inflammation and predisposing genetic factors [3,4].

FM has been characterized as chronic and relatively treatment resistant in the past, with a significant socioeconomic impact related to direct financial expenses of medical

interventions and productivity losses [5]. Traditional treatment modalities are based on antidepressants, anticonvulsants, analgesics, physical therapy methodologies and psychological interventions such as cognitive-behavioral therapy [6]. Nevertheless, complete response rate to these modalities of treatment is sluggish with symptoms only partially alleviated being the most common outcome. In this sense, FM was considered an inexorable disease and prompted symptomatic treatment only.

Over the past years, however, a new light has been cast on FM by publications and studies showing that in some patients it is clearly possible to reach full remission of all disease. Complete remission can occur when FM is secondary to a reversible underlying condition rather than an isolated entity. Primary hyperparathyroidism (pHPT), nonceliac gluten sensitivity (NCGS) and very high metabolic disorders, as morbid obesity are the most relevant causes among them [7-9]. In most of such cases, treatment of the underlying cause (eg: parathyroidectomy for pHPT) results in complete and sustained symptom relief with resolution of all FM treatment and even without any FM meds.

As well as targeting the underpinning etiologies new treatments have been investigated which are attempting to modulate pain pathways more directly. Hyperbaric oxygen treatment (HBOT), for instance, has proved successful in trials through stimulation of neuroplasticity and normalization of the brain circuits involved in pain, leading to cancellation of the diagnostic criteria for FM among a considerable number of patients [9,10]. Similarly, integrative approaches, including xenobiotic detoxification protocols and mind–body neuromodulation such as external Qigong, have also been associated with isolated reports of complete remission [11].

These results counteract the idea that FM must be characterized as a chronic and untreatable entity in all patients, underscoring the importance of individualized therapy. Identification of etiological factors and specific therapies can enhance quality of life, and in distinct subgroups even result in complete remission. In this context, the objective of the present review is to establish and critically analyze the conventional and gray scientific literature describing cases in which FM has been cured or when complete remission occurred, thereby laying a reference framework for the development of more accurate and effective therapeutic strategies.

**Methods**

We conducted a comprehensive review of conventional and gray literature to identify all case reports, case series, observational studies, and clinical trials that reported complete remission of FM. The sources for the search were broad, taking in wellknown biomedical databases – PubMed (including MEDLINE database), Scopus, Web of Science, Cochrane Library, LILACS and SciELO) and gray literature (Google Scholar, congresses abstracts (American College of Rheumatology – ACR/ American Association of Endocrine Surgeons- AAES/ ENDO Society), academic thesis and institutional

repositories).

***Search strategies*:** search strategies were developed using controlled descriptors (MeSH) and keywords, in various combinations that included the terms: "fibromyalgia," "complete remission," "resolution," "cure," "hyperparathyroidism," "gluten sensitivity," "hyperbaric oxygen therapy," "detoxification," "bariatric surgery," etc.No filters for language or year of publication were used, to achieve the broadest reach.

Studies that met the criteria for inclusion were completely reviewed by two reviewers. The following data were extracted: authors, year of publication, country; type of study design; sample size, age and gender of participants; interventions; duration follow-up time; diagnostic criteria (the 1990 ACR, the 2010 ACR or the 2016 ACR); measurement tools (FIQ, WPI score SSS tender point examination), laboratory indexes (serum calcium PTH); imaging findings and histopathology if available. Recurrence after

re-exposure to the causative factor was also noted if it occurred.

The studies were given priority when documentation of the disappearance to formal diagnostic criteria for FM had been described, or withdrawal of all medications prescribed for the syndrome. Articles in which some, but not total, recovery was achieved were also excluded. The references were listed in Vancouver style and numbered in the

order of citation.

**Results**

Two main categories of interventions were identified as capable of promoting cure or complete remission of FM. The first involves the treatment of underlying clinical conditions, with emphasis on primary hyperparathyroidism, in which surgical correction through parathyroidectomy resulted in remarkable outcomes. The second category includes specific therapies aimed at modulating the pathophysiological mechanisms of pain, including dietary changes, metabolic interventions, integrative therapies, and neuromodulation techniques. Cases were also found in which symptoms recurred after re-exposure to the causal factor, such as in the subgroup with non-celiac gluten sensitivity, reinforcing the role of these triggers in the clinical expression of FM.

**Results related to hyperparathyroidism (Table 1)**

The most robust study was conducted by Adkisson et al. [8], involving 2,184 patients who underwent parathyroidectomy, of whom 80 had a prior diagnosis of FM. After surgery, 89% reported improvement in at least one symptom, and 21% were able to discontinue all medications used for FM, constituting complete functional remission. Additional reports presented at congresses, such as AAES and ACR, corroborate these findings, showing that in many cases, FM may represent the clinical manifestation of undiagnosed pHPT [9]. In a Canadian survey, 11% of patients labeled as FM had

previously unrecognized pHPT, reinforcing the need for routine laboratory screening [10].

Furthermore, rare cases of parathyroid carcinoma, such as that described by Huynh

**Results related to other interventions (Table 2)**

The series conducted by Isasi et al. [11] revealed that among 20 patients with FM and NCGS, 15 achieved complete remission after adhering to a gluten-free diet. Of these, eight experienced symptom recurrence when gluten was reintroduced, but returned to remission after resuming the diet, demonstrating a strong causal relationship. This pattern was also confirmed in an individual report by the same team [12].

Hyperbaric oxygen therapy emerged as an innovative approach. In a randomized clinical trial, Ablin et al. [13] showed that 37.9% of patients undergoing HBOT no longer met the diagnostic criteria for FM (ACR 2010), while none of the patients in the group treated only with drugs achieved this outcome. This result indicates that HBOT can induce neuroplasticity and reversal of central pain mechanisms, representing a promising option for refractory cases.

The case described by Boros et al. [14] reported complete resolution of FM symptoms after bariatric surgery, confirmed by the reduction of tender points and discontinuation of analgesics. Observational studies corroborate these findings, suggesting that substantial weight loss may act as a modulator of symptoms in obese patients with FM [15].

The protocol described by Mutter et al. [16], involving xenobiotic detoxification, diet, supplementation, and acupuncture, resulted in sustained complete cure for more than two years in a young patient with severe FM. In addition, neuromodulation techniques such as external Qigong demonstrated benefits in small groups: in a pilot series, two patients became completely asymptomatic [17], and individual reports confirmed total recovery maintained for at least three months [18].

**Discussion**

The findings of this review indicate that complete remission of FM is not only possible but has been documented under different etiological and therapeutic circumstances. In summary, total remission was observed when FM proved to be secondary to treatable conditions, especially in primary hyperparathyroidism, where parathyroidectomy led some patients to complete discontinuation of FM-related medications and broad symptom improvement [8–10]. In parallel, interventions aimed at modulating pain and neuroplasticity mechanisms, such as hyperbaric oxygen therapy, achieved formal loss of FM diagnostic criteria in subgroups, suggesting functional reversal of central pain circuits [13]. Other strategies, such as gluten-free diet in nonceliac gluten sensitivity, reported remission with symptomatic recurrence upon reexposure to the dietary trigger and new remission after withdrawal, a pattern strongly compatible with individual causality [11,12]. There are also isolated reports

of resolution after metabolic interventions (bariatric surgery) and integrative protocols, as well as mind-body neuromodulation (Qigong), which, although with lower levels of evidence, reinforce the hypothesis of pathophysiological heterogeneity with windows of reversibility [14–18].

When discussing pHPT and FM, it is plausible that endocrine-mineral axes modulating neuromuscular excitability, energy metabolism, and inflammatory mediators play a key role in the genesis of diffuse pain, fatigue, and hypersensitivity. Hypercalcemia and excess PTH are associated with altered bone turnover, proximal myopathy, musculoskeletal pain, and fatigue, in addition to neuropsychiatric symptoms that can mimic FM criteria [7–9]. In the surgical cohort study of 2,184 parathyroidectomies, 80 patients had a prior FM diagnosis and, after surgery, 89% reported improvement in at least one symptom and 21% discontinued all specific FM medications, compatible with complete functional remission [8]. In scientific communications presented at congresses (AAES/ACR), it was also observed that a considerable proportion of patients labeled as FM had unrecognized pHPT, reinforcing the need for routine laboratory screening (calcium and PTH) in cases of diffuse pain and fatigue of uncertain etiology [9,10]. Identification and surgical correction of pHPT, therefore, seem to produce a concrete "physiopathological reversal" of the diffuse pain phenotype. Rarer reports of parathyroid carcinoma clinically "disguising" as FM illustrate the relevance of a broad differential diagnosis in the endocrine axis [10].

In the domain of interventions targeting central pain mechanisms, HBOT appears as a candidate to reverse central sensitization phenomena and nociceptive network dysfunctions. In a randomized clinical trial, 37.9% of patients treated with 60 HBOT sessions no longer met

diagnostic criteria (ACR 2010), compared to 0% in the pharmacological arm [13]. These results are consistent with physiological literature describing increased tissue oxygenation, improved mitochondrial metabolism, and modulation of neuroinflammation, including effects on glia and cerebral microcirculation, mechanisms consistent with sustained reduction of pain hypersensitivity. The possibility of restorative neuroplasticity induction by HBOT, combined with the magnitude of the clinical outcome (loss of criteria), provides biological plausibility and clinical relevance to the finding, although generalization
requires multicenter replications and phenotypic stratification.

The evidence from NCGS helps illuminate a subgroup in which the immuneintestinal interface may sustain the FM phenotype. In the series of 20 cases, 15 patients
entered complete remission with a gluten-free diet; eight relapsed with gluten
reintroduction and returned to remission when the trigger was withdrawn again [11]. This pattern of symptom fluctuation in response to dietary exposure reinforces the causal link. Mechanistically, barrier permeability, mucosal activation, and systemic inflammatory signaling with effects on the central nervous system are discussed, exacerbating pain sensitization [6,11,12]. In practice, this set of data suggests that gastrointestinal symptoms, personal/family history of intolerances, and compatible clinical markers should prompt directed screening and, when appropriate, monitored dietary trials with
objective measurement of clinical and functional outcomes.

The metabolic axis provides another window of reversibility. In a patient with severe obesity, complete resolution of FM after gastric bypass was accompanied by a reduction in tender points and discontinuation of analgesics [14]. Observational studies indicate that intense weight loss, reduction of pro-inflammatory adipokines, and rebalancing of metabolic

hormones can attenuate peripheral and central amplifiers of pain [15]. Although levels of evidence vary, the set suggests that metabolic inflammation, insulin resistance, and mitochondrial dysfunction may act as "guiding molecules" of central sensitization, and are therefore potentially disease-modifying therapeutic targets in subgroups with obesity and metabolic syndrome.

Integrative and neuromodulation approaches add an additional spectrum of reversibility. The report of sustained complete remission after a xenobiotic elimination protocol, combined with diet, supplementation, and acupuncture, suggests that environmental exposures and oxidative stress may contribute to the maintenance of the painful phenotype in certain patients [16]. In the mind-body field, small series and reports of external Qigong documented cases of complete disappearance of symptoms in short-term follow-ups [17,18]. Although the evidence is preliminary and heterogeneous, these results are consistent with hypotheses of autonomic modulation, increased vagal tone, reduction of hypervigilance, and recalibration of corticolimbic pain circuits, dimensions increasingly recognized in FM pathophysiology [3,4].

This review has limitations. The evidence base for several interventions with a complete remission outcome is still composed of case reports and small series, with inherent risk of publication and selection bias. Gray literature, crucial to identify rare or emerging phenomena, lacks methodological standardization and peer review. Diagnostic criteria for FM have evolved over recent decades, introducing heterogeneity into studies and hindering direct comparability of outcomes. In pHPT, for example, many reports do not present paired laboratory data (calcium/PTH pre- and post-intervention) specific to FM-labeled subgroups; in HBOT and integrative interventions, multicenter trials with statistical

power are lacking to confirm remission rates and define effect moderators. Furthermore, the absence of robust biomarkers of disease activity in FM limits the full objectification of the "remission" construct and may overestimate responses in open or non-blinded contexts.

In conclusion, the synthesized results support a paradigm shift in FM: from a uniform, predominantly symptomatic model to a personalized approach, aimed at identifying and correcting causal factors in subgroups and modulating neural circuits in refractory cases. The treatment of pHPT with parathyroidectomy strikingly illustrates the possibility of complete remission when FM is an epiphenomenon of a correctable endocrinopathy [8–10]. In parallel, therapeutic diets in NCGS, HBOT, and metabolic and integrative interventions suggest multiple pathways for reversing the painful phenotype, some with experimental causality markers, such as recurrence with gluten re-exposure [11–14,16–18]. Future studies should prioritize controlled trials with standardized remission outcomes, exploration of biomarkers (immunometabolic, neuroimaging, neurophysiology), and phenotypic stratification strategies that allow predicting who can, in fact, achieve cure.

**Declarations**

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**Table 1. Parathyroidectomy in patients with a previous diagnosis of fibromyalgia**

| Author (Year) | Intervention | Study type | N (FM) | Age (years) | Sex | Country | Follow-up | FM outcome | FM diagnostic criteria | Serum calcium pre → post | PTH pre → post | Imaging | Histology | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adkisson et al. (2014) | Parathyroidectomy surgical ND in pHPT | Prospective cohort | 80 (of 2184) | | Mostly female | USA | ≥ 6 months | 89% improvement in ≥ 1 symptom; 21% discontinued all medications → complete functional remission | Prior clinical diagnosis, context ACR 1990 | ND | ND | ND | Predominantly adenoma | [8] |
| McCoy & Milas (2014, AAES) | Parathyroidectomy in pHPT | Congress abstract (gray literature) | 80 | ND | Mostly female | USA | ND | 84% stopped ≥ 1 drug; 21% stopped all FM drugs | Prior clinical diagnosis | ND | ND | ND | ND | [9] |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tsoukas (2013, literature) | Screening for pHPT in FM patients | Cross-sectional study (gray ACR) | 38 | ND | ND | Canada | ND | 11% of patients labeled as FM had undiagnosed pHPT | ND | ND | ND | ND | ND | [10] |
| **Author (Year)** | **Intervention** | **Study type** | **N (FM)** | **Age (years)** | **Sex** | **Country** | **Follow-up** | **FM outcome** | **FM** | **Serum calcium pre → post** | **PTH Imaging pre → post** | **Histology pre → post** | **diagnostic → criteria** | **Reference** |

**Table 2. Other interventions associated with complete remission of fibromyalgia**

| Author (Year) | Intervention | Study type | N | Age (years) | Sex | Country | Follow-up | FM outcome | FM diagnostic criteria | Scales used | Recurrence | Reference |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Isasi et al. (2014) | Gluten-free diet (NCGS) | Case series | 20 | Varied | Mostly female | Spain | 5–31 months (mean 16.4) | 15/20 in complete remission; return to normal life | ACR 1990 | Tender Points, pain | 8/20 relapsed with gluten re-exposure | [11] |
| Isasi et al. (2014) | Gluten-free diet (NCGS) | Case report | 1 | 40 | F | Spain | 24 months | Complete remission; relapse with gluten reintroduction; new remission after diet resumed | ACR 1990 | Tender Points, pain | Yes | [12] |
| Ablin et al. (2023) | Hyperbaric oxygen therapy (HBOT) | Randomized clinical trial | 64 (29 HBOT) | ND | Mostly female | Israel | 8–12 weeks | 37.9% of the HBOT group no longer met FM diagnostic criteria (vs. 0% in control group) | ACR 2010 | FIQ, WPI, SSS, SF-36, MOS-Sleep, VAS | No | [13] |
| Boros et al. | Bariatric surgery (RYGB) | Case report (2007) | 1 | 38 | F | USA | 12 months | Complete resolution of FM; discontinuation of analgesics | ACR 1990 (clinical) | Tender Points, FIQ | No | [14] |

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|---|---|---|---|---|---|---|---|---|---|---|
| Saber et al. | Bariatric surgery (RYGB) | Retrospective cohort (2008) | 25 | ND | Mostly female | USA | ≥ 6–12 months | Some patients had complete resolution of symptoms | ACR 1990 | Tender Points, pain | Not reported | [15] |
| **Author (Year)** | **Intervention** | **Study type** | **N** | **Age (years)** | **Sex** | **Country** | **Follow-up** | **FM outcome** | **FM diagnostic criteria** | **Scales used** | **Recurrence** | **Reference** |
| Mutter et al. (2007) | Xenobiotic elimination + diet + acupuncture | Case report | 1 | 28 | F | Germany | ND | Sustained complete remission for > 2 years | ACR 1990 (clinical) | Tender Points, systemic symptoms | No | [16] |
| Chen et al. | External Qigong | Pilot series (2006) | 10 | ND | 10 F | USA | 3 months | 2/10 completely asymptomatic | ACR 1990 | FIQ, MPQ, BDI, TPC | No | [17] |
| Chen et al. (2014) | External Qigong | Case reports | 2 | 57 and ND | 2 F | USA | 3 months | Total recovery maintained | ACR 1990 | FIQ, TPC | No | [18] |

NCGS – Non-celiac gluten sensitivity; HBOT – Hyperbaric oxygen therapy; RYGB – Roux-en-Y gastric bypass; FIQ – Fibromyalgia Impact Questionnaire; WPI – Widespread Pain Index; SSS – Symptom Severity Scale; MOS-Sleep – Medical Outcomes Study Sleep Scale; VAS – Visual Analog Scale; ND – Not described.