LIVER FIBROSIS DEGREE ASSESSED BY HEPATIC ELASTOGRAPHY IN SEVERELY OBESE PATIENTS INDICATED FOR BARIATRIC SURGERY: A LITERATURE REVIEW

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ABSTRACT
Introduction: Obesity is a global health problem that has increased significantly in recent years. Bariatric surgery emerges as a treatment alternative for individuals with morbid obesity. Alongside obesity, the prevalence of non-alcoholic fatty liver disease (NAFLD) has also risen, predisposing these individuals to cirrhosis and hepatocellular carcinoma. Currently, liver biopsy remains the gold standard for diagnosis; however, it is an invasive procedure with potential complications. Therefore, new non-invasive tests have been proposed to identify such changes, such as hepatic elastography, which allows the detection of liver fibrosis without invasive procedures. **Objective**: To identify the degree of hepatic fibrosis in severely obese patients indicated for bariatric surgery using hepatic elastography. **Methodology**: Seven clinical trials were extracted from PubMed, published between 2019 and 2024. Health Science Descriptors (DeCS) used were: “Bariatric Surgery,” “Elastography,” and “Obesity.” Inclusion criteria were original studies published in English. **Results**: Elastography proved effective in detecting fibrosis, showing no significant differences when compared with liver biopsy. Only one study failed to show diagnostic accuracy in patients with higher BMI values. **Conclusion**: Elastography can be used to identify liver fibrosis in this population; however, further studies are required to reinforce these findings.

Keywords: Non-alcoholic fatty liver disease, hepatic fibrosis, bariatric surgery, elastography, obesity**.**

INTRODUCTION

According to the World Health Organization (WHO), obesity is a global health problem that has increased significantly in both adult and pediatric populations. Between 1990 and 2022, the percentage of adults over 18 years with obesity more than doubled, from 7% to 16%. Bariatric surgery is a treatment option for morbidly obese patients who are refractory to weight loss through diet and physical activity. The procedure is indicated for patients with BMI ≥ 40 kg/m² or BMI ≥ 35 kg/m² with severe obesity-related comorbidities.

In parallel with obesity rates, the prevalence of non-alcoholic fatty liver disease (NAFLD) has increased. NAFLD encompasses a spectrum of liver conditions, including non-alcoholic fatty liver (NAFL) and non-alcoholic steatohepatitis (NASH), defined histologically. These conditions, when associated with liver fibrosis, increase the risk

of cirrhosis and hepatocellular carcinoma. Fibrosis represents the replacement of hepatocytes with scar tissue due to chronic liver injury. Although cirrhosis has historically been considered irreversible, recent studies indicate that bariatric surgery may reduce fibrosis from stage F4 (cirrhosis) to F3 or even F1 in some patients.

Currently, liver biopsy is the gold standard for diagnosing hepatic fibrosis. However, it is invasive. Elastography offers a safer, non-invasive alternative for fibrosis assessment. Using an ultrasound probe, the device emits elastic waves to measure liver stiffness, allowing fibrosis evaluation. This method has gained popularity due to patient acceptance and lower risk of complications. Nevertheless, its effectiveness in severely obese patients remains under discussion.

This study aims to review recent literature to identify the degree of hepatic fibrosis in severely obese patients indicated for bariatric surgery using hepatic elastography.

METHODOLOGY

This study is a literature review. Article searches were conducted in the PubMed database in September 2024. Search criteria included studies published between 2019 and 2024, using the Health Sciences Descriptors (DeCS): “Bariatric Surgery,” “Elastography,” and “Obesity,” combined with the Boolean operator “AND.” Inclusion criteria were clinical trials published in English that addressed the use of elastography to detect fibrosis in obese patients. Exclusion criteria included non-original studies, incomplete studies, or studies with missing data.

RESULTS

Seven articles were selected (presented in Table 1), demonstrating that elastography can be used to detect liver fibrosis in obese patients indicated for bariatric surgery, with results comparable to those obtained through liver biopsy, the current gold standard. Although most studies reported favorable results for elastography, the study by Silva et al. (2021) found an overestimation of fibrosis values, especially in patients with BMI ≥ 42 kg/m², indicating limited diagnostic utility in this subgroup.

Tabela 1. Ensaios Clínicos que avaliaram o uso da elastografia para identificar fibrose em pacientes candidatos a cirurgia bariátrica

Autor/ Ano	Amostra (n)	Objetivo	Intervenção	Resultado
SILVA et al. (2021)[7]	108	Avaliar a performance da elastografia e dos scores para detectar fibrose hepática significativa em pacientes obesos;	• Elastografia feita 4 semanas antes da cirurgia; • Elastografia feita após a cirurgia; • Colhida biópsia intra-operatória;	Houve uma superestimação de fibrose nos pacientes obesos, não apresentando benefício diagnóstico para pacientes com IMC $\geq$ 42kg/m^2.
LIMA et al. (2022)[8]	17	Quantificar fibrose hepática e esteatose usando elastografia com o dispositivo Fibroscan, no pré e pós-operatório, em pacientes obesos com indicação para cirurgia bariátrica;	• Elastografia realizada antes da cirurgia; • Novo exame de imagem após a cirurgia;	A elastografia foi considerado um método adequado e com precisão para validar a redução de fibrose hepática e esteatose no pós-operatório de cirurgia bariátrica. Além de não apresentar falhas nos valores coletados no pré-operatório.
AGARWAL et al. (2020)[9]	58	Mudança no grau da esteatose e no estágio da fibrose após bariátrica por biópsia e Fibroscan, além do impacto na obesidade e síndrome metabólica;	• Elastografia realizada 2 semanas antes da cirurgia; • Elastografia realizada 1 ano após a cirurgia; • Colhida biópsia intra-operatória;	Apresentou taxa de sucesso de 93,3% nos pacientes obesos. Os valores que apresentaram erro estão associados com maior IMC.
TAN et al. (2023)[10]	9	Monitorar de forma não invasiva a presença de NAFLD/NASH e fibrose antes e após a bariátrica;	• Realizada RM e elastografia após 1 mês; • Realizada RM e elastografia após 6 mês; • Realizada RM e elastografia antes da cirurgia;	Foi demonstrado que a associação de RM e elastografia nos permite melhor entender a progressão da NAFLD nos estágios iniciais.
LIU et al. (2021)[11]	37	Avaliar o papel da elastografia como uma ferramenta de monitoramento.	• Elastografia realizada 4 semanas antes da cirurgia; • Elastografia realizada anualmente até 5 após a bariátrica; • Biópsia colhida durante a cirurgia;	O grau de fibrose detectado pela biópsia hepática não apresentou divergências significativas em relação aos valores detectados pela elastografia no pré-operatório. Ainda, se mostrou uma boa ferramenta para o acompanhamento de fibrose após cirurgia.
COCCIA et al. (2019)[12]	90	Detecção de fibrose significativa, avaliando o desempenho dos escores de esteatose e fibrose comumente usados, e método de ultrassom como radiação acústica impulso de força (ARFI).	• Realizar elastografia antes da cirurgia; • Realizada biópsia intra-operatória;	A elastografia apresentou valores mais altos quando apresentava estágio 2 (F2) de fibrose, em comparação com aqueles F0/F1.
KAUL et al. (2020)[13]	38	Avaliar a segurança e os resultados de MBS em pacientes gravemente obesos com doença hepática avançada fibrose, ou seja, estágio 3 e 4.	• Realizada elastografia antes da cirurgia; • Realizada biópsia intra-operatória;	Os valores de CAP e LSM coletados se correlacionam bem com esteatose e fibrose. As imprecisões devido a gordura foram superadas com o uso de sondas maiores.

Fonte: Autoral

Notas: NAFLD = Doença gordurosa não alcóolica do fígado; NASH = Esteatohepatite não alcóolica; RM = Ressonância Magnética; CAP = Parâmetro de atenuação controlada; LSM = Medida da rigidez hepática; MBS = Cirurgia metabólica e bariátrica.

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