

# Sarcopenia, muscle quality, and gastric cancer surgery

## 1 | INTRODUCTION

Sarcopenia is well-known to be a risk for increased postoperative complications and worsened survival after surgery, especially among elderly patients. In 2018, the definition and diagnosis of sarcopenia were revised by the European Working Group on Sarcopenia in Older People (EWGSOP). The quality of skeletal muscles was added as one of the definition's criteria. Muscle quality is a relatively new term reflecting micro- and macroscopic changes in muscle architecture, composition, and muscle function. The measurement of muscle quality was, also, reported to be important in the evolution of sarcopenia.<sup>1</sup> The determining infiltration of fat into muscle by computed tomography (CT) or magnetic resonance imaging (MRI) was recommended as one of the tools to measure muscle quality.

In this issue of *Annals of Gastroenterological Surgery*, Matsui et al reported the adverse impact of preoperative muscle quality evaluated by intramuscular adipose tissue content (IMAC) on outcomes after radical gastrectomy. This finding is quite important because poor skeletal muscle quality was firstly shown as an independent predictive factor for severe complications after gastrectomy and to be potential as compared to the muscle quantity. Waki et al also reported that skeletal muscle quality, i.e. high IMAC, was significantly associated with poor survival after curative gastrectomy and had the strongest influence among the other parameters including muscle quality, i.e. psoas muscle index.<sup>2</sup> To date, the significance of sarcopenia in the clinical setting has been well-recognized by physicians. Based on those findings, the muscle quality should be known as a significant marker of sarcopenia, and essential when considering clinical research focused on sarcopenia.

What we can do clinically for sarcopenia patients should be discussed. As general surgeons, there are possibilities for gastric cancer patients: exercise and operative procedure. We reported that a preoperative exercise habit could reduce post-gastrectomy complications.<sup>3</sup> Preoperative 16-day exercise programs with nutritional support for elderly sarcopenia patients with gastric cancer were shown to potentially diminish sarcopenia before surgery and improve postoperative outcomes.<sup>4</sup> Thus, the important role of exercise should be recognized again. Recent studies revealed that the loss of skeletal muscle after gastrectomy was associated with poor prognosis, and



**FIGURE 1** Changes of operative procedures of gastric cancer at the University of Tokyo Hospital

the most reduction was observed after total gastrectomy as compared to the other procedures in which a part of the stomach can be preserved.<sup>5</sup> Therefore, total gastrectomy should be avoided, especially for elderly patients, to prevent the post-gastrectomy sarcopenia as far as the oncological margin is guaranteed. Figure 1 shows the change of operative procedures of gastric cancer in our department. From 2013, the total gastrectomy cases have evidently decreased, and now, the ratio is around 15%. In Japan, the frequency of total gastrectomy among all gastrectomy procedures is estimated around 30% based on a nationwide registry of the Japanese Gastric Cancer Association. Considering that preservation of the stomach is essential for patients with gastric cancer, we are reminded of the importance of sarcopenia when treating this disease.

## DISCLOSURE

Conflict of Interest: The author declares no conflicts of interest for this article.

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