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Commentary

Nutritional Evaluation and Support in Patients with Chronic Kidney Disease

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DESCRIPTION

Obesity and Chronic Kidney Disease (CKD) are increasingly common conditions that frequently coexist. Obesity contributes to the onset and progression of renal dysfunction through various mechanisms, including glomerular hyperfiltration, insulin resistance and systemic inflammation. Sleeve gastrectomy, a restrictive bariatric procedure, has become one of the most commonly performed weight-loss surgeries. It offers effective weight reduction and metabolic improvements that can benefit patients with obesity and renal failure.

However, the coexistence of renal impairment introduces specific challenges in nutritional management before and after sleeve gastrectomy. Maintaining adequate nutritional intake while accommodating the altered metabolic and fluid handling capabilities of compromised kidneys requires careful planning.

Sleeve gastrectomy and nutritional implications

Sleeve gastrectomy involves the resection of approximately 75-80% of the stomach along the greater curvature, leaving a tubular gastric remnant. This restricts the volume of food intake and alters hunger-regulating hormones such as ghrelin. Unlike malabsorptive procedures, sleeve gastrectomy has a lower risk of nutrient malabsorption. However, it still carries the potential for deficiencies due to reduced food volume, vomiting, altered dietary choices and postoperative intolerance.

Nutritional care for patients after sleeve gastrectomy includes staged dietary progression, protein supplementation, vitamin and mineral monitoring and hydration strategies. For patients with renal failure, these components must be further individualized to accommodate kidney function limitations, which affect protein metabolism, fluid balance and electrolyte handling.

Nutritional goals in renal failure

Patients with CKD have complex nutritional needs that vary with disease stage, dialysis status and comorbidities. Key goals of nutritional therapy in this population include preventing malnutrition and muscle wasting, controlling blood pressure and blood glucose levels, managing electrolyte imbalances, especially potassium, phosphorus and sodium, slowing progression of renal damage, avoiding uremic symptoms, supporting adequate energy intake following sleeve gastrectomy, meeting these goals becomes more challenging due to reduced intake capacity and changes in gastrointestinal physiology.

Fluid and electrolyte management

Fluid balance is a key consideration in renal failure. Sleeve gastrectomy patients are at risk of dehydration due to reduced stomach capacity and intolerance to large fluid volumes. Conversely, renal failure patients may need fluid restriction. Strategies include encouraging small, frequent sips of fluids throughout the day, avoiding fluid intake with meals to maximize nutrient absorption, monitoring for signs of volume overload or dehydration, adjusting fluid recommendations based on dialysis schedules and urine output. Electrolyte management, particularly of potassium, phosphorus and sodium, is essential. Foods and supplements high in potassium or phosphorus must be carefully reviewed, especially as postoperative dietary intake becomes more concentrated.

Special considerations for dialysis patients

Patients on hemodialysis or peritoneal dialysis undergoing sleeve gastrectomy require close coordination around dialysis timing, fluid shifts and nutrient losses. Nutrient-rich, dialysis-compatible oral supplements may support recovery. In some cases, enteral nutrition support may be needed short-term if oral intake remains inadequate.

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Dialysis patients also face heightened infection risk, so careful attention to wound healing, glucose control and anemia management is essential.

Potential benefits of weight loss in renal failure

Despite the challenges, sleeve gastrectomy can offer significant advantages in patients with renal impairment reduction in systemic inflammation and insulin resistance, improved blood pressure and glucose control, slower progression of kidney disease in earlier stages, increased eligibility for renal transplantation due to BMI reduction, better physical function and quality of life

These benefits must be balanced with the risk of nutritional complications, making individualized care essential.

Nutritional management in patients with renal failure undergoing sleeve gastrectomy requires careful coordination, individualized planning and ongoing assessment. Protein, calorie, fluid, electrolyte and micronutrient needs must all be balanced against the backdrop of reduced gastric capacity and impaired kidney function. With structured guidance and interdisciplinary collaboration, patients can achieve meaningful weight loss and metabolic improvement while minimizing the risk of nutritional deficiencies and renal complications. Early evaluation, consistent follow-up and proactive intervention remain the cornerstones of successful outcomes in this complex and growing patient population.