Perspective

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Renal Angioplasty Outcomes: Clinical Effectiveness and Long-Term Considerations

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Introduction

Renal angioplasty is an endovascular procedure used to treat renal artery stenosis, a condition that can lead to renovascular hypertension, progressive renal dysfunction, and increased cardiovascular risk. The procedure involves balloon dilation of a narrowed renal artery, often combined with stent placement to maintain vessel patency. Over the years, renal angioplasty has been widely adopted due to its minimally invasive nature and favorable safety profile compared with surgical revascularization [1,2]. Evaluating the outcomes of renal angioplasty is essential for guiding patient selection and optimizing therapeutic benefit.

Discussion

Clinical outcomes of renal angioplasty are typically assessed based on blood pressure control, preservation or improvement of renal function, and procedural safety. Technical success rates are high, with most procedures achieving immediate restoration of arterial patency. In patients with resistant hypertension, renal angioplasty may lead to significant reductions in blood pressure and a decreased need for antihypertensive medications, particularly when stenosis is hemodynamically significant.

Renal function outcomes vary depending on patient characteristics and disease chronicity. Individuals with recent-onset renal impairment, bilateral renal artery stenosis, or stenosis affecting a solitary functioning kidney are more likely to experience stabilization or improvement in renal function. In contrast, patients with advanced chronic kidney disease or long-standing ischemic nephropathy may derive limited renal benefit. These findings underscore the importance of early diagnosis and appropriate patient selection [3,4].

Several large clinical trials have demonstrated that routine renal angioplasty offers no clear advantage over optimal medical therapy in unselected populations. However, subgroup analyses suggest meaningful benefits in high-risk patients, such as those with recurrent flash pulmonary edema or rapidly declining renal function. Procedural complications are relatively uncommon but may include contrast-induced nephropathy, arterial dissection, embolization, and restenosis. Advances in imaging, stent technology, and contrast-sparing techniques have contributed to improved safety and long-term outcomes [5].

Conclusion

Renal angioplasty is a safe and effective intervention for selected patients with clinically significant renal artery stenosis. While its routine use in all cases is not supported by current evidence, carefully chosen patients may experience improved blood pressure control, stabilization of renal function, and reduced cardiovascular events. Long-term outcomes depend on appropriate patient selection, technical expertise, and ongoing clinical surveillance. Renal angioplasty should therefore be considered as part of an individualized, multidisciplinary approach to the management of renovascular disease.

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