Urogenital cancers place a great burden on global health. Despite many forms of treatment available, many patients with prostate or ovarian cancer experience remissions or progressive disease. Active cell-based immunotherapy utilizes immune cells acquired from the patient or a healthy donor to directly target and destroy tumour cells. Several therapies of this type have been approved for clinical use. However, their effectiveness is still far from being satisfactory. Dendritic cells (DCs) play an important role in initiating and modulating adaptive immune responses, making them a powerful tool for cancer therapies. In this work, current development and future perspectives on using DCs to treat prostate and ovarian cancer are discussed.