

# Onuf's nucleus

Onuf's nucleus is a distinct group of neurons located in the ventral part (laminae IX) of the [anterior grey column](#) of the [sacral region](#) of the human spinal cord involved in the maintenance of micturition and defecatory continence, as well as muscular contraction during orgasm. It contains [motor neurons](#), and is the origin of the [pudendal nerve](#).

Nerve fibres innervating the urethral and anal striated sphincters play an important role in the regulation of urinary and defaecatory continence. These fibres are derived from a group of neurons in the sacral spinal cord known as the Onuf's nucleus. Different neuron groups innervate the anal and urethral sphincter, and the nucleus uniquely demonstrates sexual dimorphism across different species<sup>1)</sup>.



<https://www.glowm.com/resources/glowm/cd/graphics/figures/v1/0850/008f.jpg>

While working in New York City in 1899, Bronislaw Onuf-Onufrowicz discovered this group of unique cells and originally identified it as "Group X." "Group X" was considered distinct by Onufrowicz because the cells were different in size from the surrounding neurons in the anterolateral group, suggesting that they were independent.

Neuronal degenerations secondary to vasospasm of [artery of Adamkiewicz](#) vasospasm induced Onuf's nucleus-pudental nerve ganglia complex degeneration may be a reason of [urinary retention](#) following spinal [SAH](#)<sup>2)</sup>.

<sup>1)</sup>  
Panicker JN. The Onuf's nucleus, serotonin and spinal cord injury. BJU Int. 2018 Nov 30. doi: 10.1111/bju.14634. [Epub ahead of print] PubMed PMID: 30499628.

<sup>2)</sup>  
Yolas C, Kanat A, Aydin MD, Ozturk C, Kabalar E, Akca N, Eren H, Gundogdu C, Kotan D, Aydin N. The Important Liaison between the Onuf's Nucleus-Pudental Nerve Ganglia Complex Degeneration and Urinary Retention in Spinal Subarachnoid Hemorrhage: An Experimental Study. World Neurosurg. 2016 Feb 5. pii: S1878-8750(16)00170-4. doi: 10.1016/j.wneu.2016.01.082. [Epub ahead of print] PubMed PMID: 26855312.

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