

# Physiological–therapeutic study of radiofrequency ablation in the treatment of atrioventricular nodal reentrant tachycardia in the Brazilian Unified Health System between 2020 and 2024

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**Background:** Atrioventricular nodal reentrant tachycardia (AVNRT) is one of the most prevalent forms of paroxysmal supraventricular tachycardia, characterized by reentry circuits located within the atrioventricular node. Although generally benign, AVNRT may cause disabling symptoms such as palpitations, dizziness, and occasionally syncope, significantly impacting patients' quality of life. Pharmacological treatment is not always effective or well-tolerated; therefore, radiofrequency ablation (RFA) has become the therapy of choice for recurrent or refractory cases. RFA demonstrates high success rates (exceeding 95%) and low complication rates and is considered curative in most cases. **Objective:** To evaluate the physiological–therapeutic profile of radiofrequency ablation in the treatment of atrioventricular nodal reentrant tachycardia within the Brazilian Unified Health System (SUS) between 2020 and 2024. **Materials and Methods:** This is an ecological, retrospective, and descriptive study based on secondary data obtained from the Hospital Information System of the Brazilian Unified Health System (SIH/SUS), accessed through the Department of Information and Informatics of the SUS (DataSUS) platform. All hospital procedures classified as radiofrequency ablation for the treatment of atrioventricular nodal reentrant tachycardia performed in Brazil between 2020 and 2024 were included. Data were organized by state and year, considering the absolute number of procedures performed. The analysis was conducted using descriptive statistics, with the calculation of absolute frequencies and annual percentage variation. Information was tabulated in electronic spreadsheets to facilitate visualization of trends over time and comparison across regions. **Results:** During the analyzed period, 9,983 radiofrequency ablation procedures for atrioventricular nodal reentrant tachycardia were performed within the SUS. The number of procedures increased from 1,743 in 2020 to a peak of 2,279 in 2022, then declined gradually to 1,992 in 2024. In 2022, 22.8% of all records occurred during the study period. The Southeast region led with 48.8% of all procedures performed nationwide. The state of São Paulo was the main contributor, accounting for 2,784 procedures (27.9%) and peaking in 2022 with 686

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records. Minas Gerais accounted for 922 procedures (9.2%), showing growth over the period and reaching its highest number in 2024 (366). Rio de Janeiro recorded 846 procedures (8.5%), with a more stable distribution over time. In the Southern region, Paraná recorded 1,572 procedures (15.7%), peaking in 2022 (337), while Rio Grande do Sul performed 1,530 procedures (15.3%), with its highest volume in 2024 (329). Santa Catarina recorded 1,150 procedures (11.5%), up from 85 in 2020 to 297 in 2024. The Central-West region accounted for approximately 8% of procedures, with Goiás (509; 5.1%) and the Federal District (281; 2.8%) standing out and showing a continuous increase through 2024. The Northeast accounted for less than 3% of procedures, with Pernambuco (114; 1.1%) and Bahia (93; 0.9%) leading the region. Most other northeastern states showed low volumes and minimal variation. Finally, the North region represented only 1.2% of the national total. Pará was the most representative state in the region, with 83 procedures (0.8%), followed by Amazonas with only 7 (0.07%) (Table 1). States such as Roraima, Acre, and Amapá reported no procedures in most of the analyzed years. **Conclusion:** The data demonstrate an increase in radiofrequency ablation procedures for atrioventricular nodal reentrant tachycardia within the SUS between 2020 and 2022, followed by a slight reduction through 2024. Most procedures were concentrated in the Southeast and South regions, particularly in São Paulo, Paraná, and Rio Grande do Sul. In contrast, the North and parts of the Northeast showed low or absent procedure volumes, revealing significant inequalities in access to this type of treatment. These findings underscore the importance of expanding the availability of this procedure more equitably across the national territory, contributing to a more accessible and effective Unified Health System.

**Table 1. Hospital Procedures in the Public Health System – Brazil.**

Approved AIs per year, by processing year, according to state

Procedure code 0406050040 – Therapeutic electrophysiological study I (radiofrequency ablation for atrioventricular nodal reentrant tachycardia and accessory pathway-mediated tachycardia);

Period: 2020–2024

State	2020	2021	2022	2023	2024	Total
<b>Total</b>	<b>1743</b>	<b>1,734</b>	<b>2,279</b>	<b>2,235</b>	<b>1,992</b>	<b>9,983</b>
13 Amazonas	1	–	–	1	–	2
15 Pará	7	13	57	6	–	83
17 Tocantins	–	1	1	2	3	7
21 Maranhão	1	–	7	8	9	25
22 Piauí	–	–	–	17	20	37
23 Ceará	5	11	17	24	8	65
24 Rio Grande do Norte	5	6	7	12	19	49
25 Paraíba	–	–	–	23	7	30
26 Pernambuco	24	43	29	10	8	114
27 Alagoas	28	36	13	13	24	114
29 Sergipe	–	7	5	24	15	51
29 Bahia	5	22	32	44	36	139
31 Minas Gerais	172	155	241	242	179	989
32 Espírito Santo	8	42	22	14	46	132
33 Rio de Janeiro	30	37	56	61	82	266
35 São Paulo	471	643	686	554	430	2784
41 Paraná	458	177	327	309	301	1572
42 Santa Catarina	69	85	252	402	297	1105
43 Rio Grande do Sul	261	314	359	267	329	1530
50 Mato Grosso do Sul	25	–	18	24	32	99
52 Goiás	112	113	113	127	44	509
53 Distrito Federal	61	29	37	51	103	281

**Source:** Ministry of Health – Hospital Information System of the Brazilian Unified Health System (SIH/SUS).