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Is there a Weekend Effect in Short and Long Term Outcomes after rAAA?

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High Morbidity Rates and Lower Survival Compared to Weekday Submission, in:

trauma

acute aortic dissection

myocardial infarction

acute limb ischemia

- **Reduced staffing**
- **Specialization**
- **reduced outpatient facilities**

Data for surgical outcomes scarce

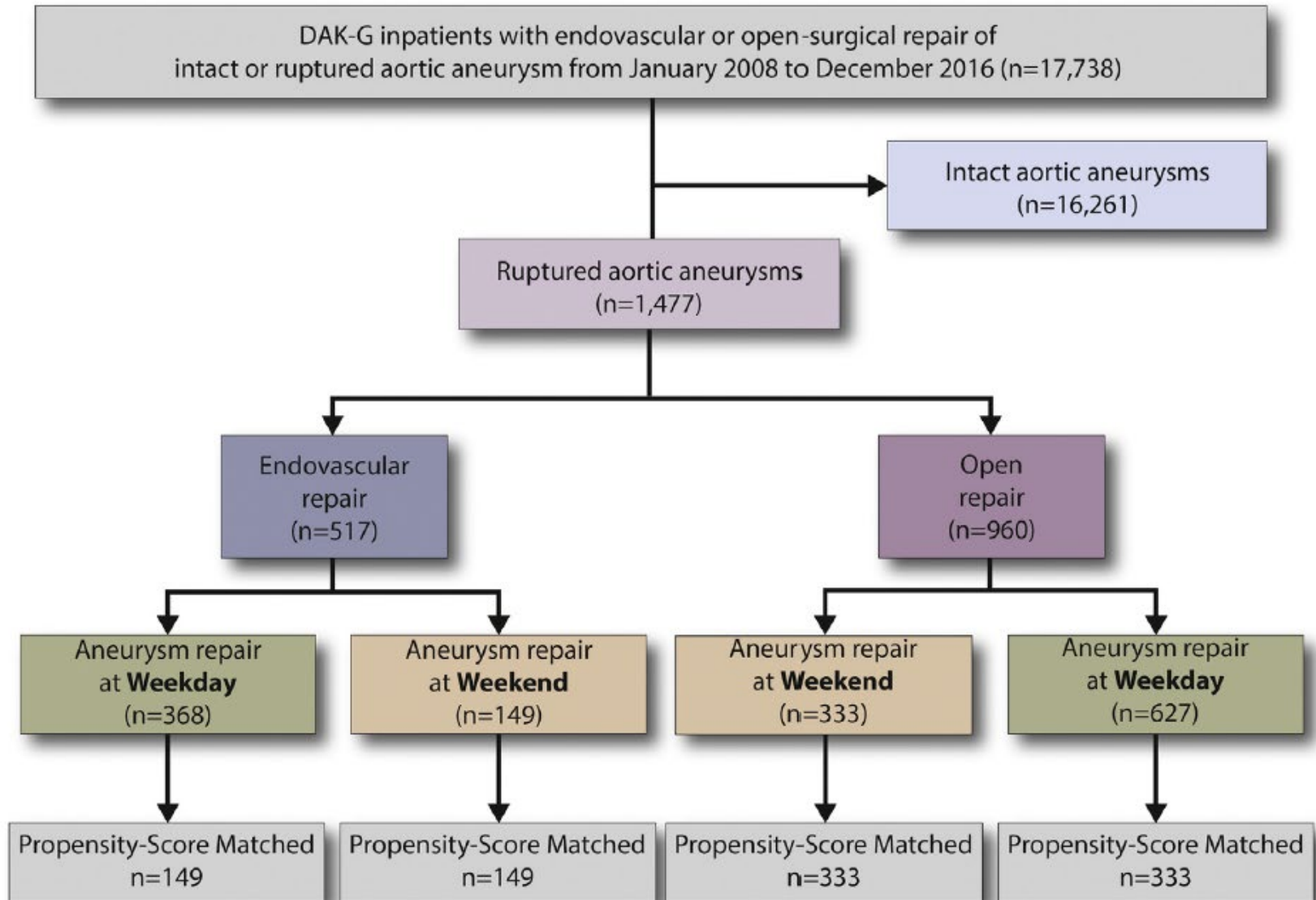
few comparative Studies on rAAA

No comparative Data on long Term Outcomes

- **Population-Based Study**
- **Claims Data (DAK Gesundheit), 2008 – 2016 (6.5 Mio Citizens, 8%)**
- **rAAA, rTAAA, rTAA**
- **Specific Predictors for Outcomes?**

- 6.5 Mio Citizens (8% German Population)
- Third largest Health Care Institution
- Female 40.4%
- 29.1% > 65 years
- **Validated data:** comparable age and gender distribution,
- Homogenous Spread over Germany
- nationally generalizable

- ICD-10 codes I71.1, I71.3, I71.5, I71.8
- OPS codes for open (OR; 5-384) and endovascular (ER; 5-38a, 8-842) Repair
- data on demographics, primary and secondary in-hospital procedures, comorbidities, reason for discharge
- **long-term survival analyses:** censoring patients, whose insurance contract expired within the follow-up period
- **Subgroups:** aneurysm repair conducted on weekdays versus weekend, endovascular repair versus open repair
- Elixhauser Coding for Comorbidities, van Walraven Score for Adjustment
- One-to-one propensity score matching to balance between patients which were operated at weekend and weekdays to scrutinize for any selection bias

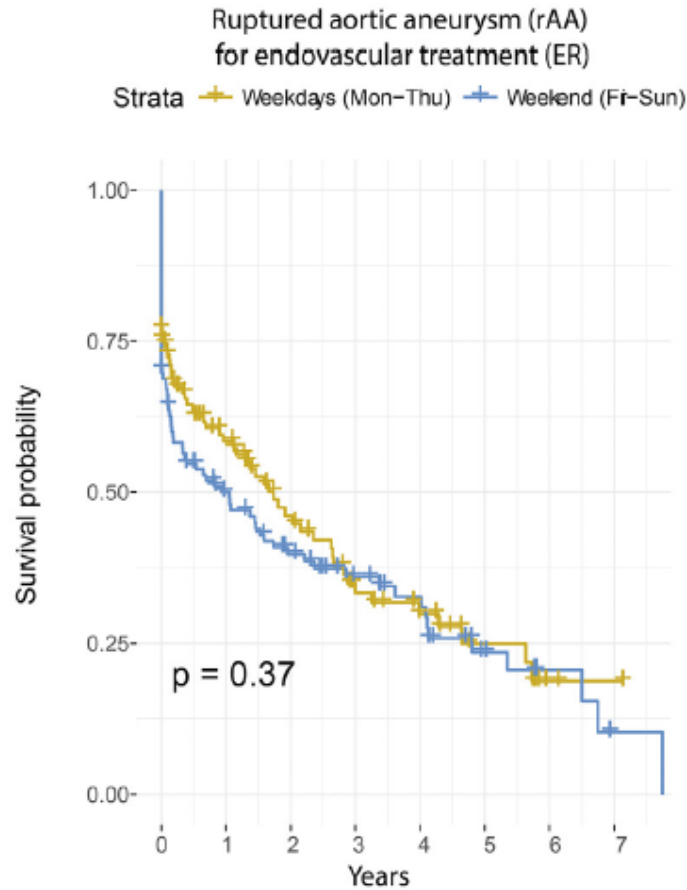


High Consistency: Only 2 Patients lost to follow up, due to cancellation of Health Insurancy...



Ruptured aortic aneurysm	ER			OSR		
	Weekday	Weekend	<i>P</i> value	Weekday	Weekend	<i>P</i> value
No. of patients	149	149		333	333	
In-hospital mortality	36 (24.2)	44 (29.5)	.360	128 (38.4)	164 (49.2)	.006
Mortality after 30 days	41 (27.5)	48 (32.2)	.448	139 (41.7)	171 (51.4)	.016
Mortality after 90 days	48 (32.2)	58 (38.9)	.276	144 (43.2)	171 (51.4)	.044
Acute respiratory insufficiency	44 (29.5)	43 (28.9)	1.000	167 (50.2)	150 (45.0)	.214
Acute renal insufficiency	31 (20.8)	28 (18.8)	.771	111 (33.3)	123 (36.9)	.372
Acute myocardial infarction	11 (7.4)	10 (6.7)	1.000	19 (5.7)	25 (7.5)	.435
Stroke or TIA	8 (5.4)	4 (2.7)	.377	10 (3.0)	10 (3.0)	1.000
Paraplegia	7 (4.7)	3 (2.0)	.335	6 (1.8)	6 (1.8)	1.000
Delirium	1 (0.7)	1 (0.7)	1.000	0 (0.0)	1 (0.3)	1.000
Pneumonia	23 (15.4)	17 (11.4)	.396	59 (17.7)	52 (15.6)	.533
Acute bowel ischemia	5 (3.4)	5 (3.4)	1.000	39 (11.7)	41 (12.3)	.905
Acute limb ischemia	44 (29.5)	34 (22.8)	.236	72 (21.6)	72 (21.6)	1.000
Lower extremity amputation	0 (0.0)	1 (0.7)	1.000	2 (0.6)	4 (1.2)	.682
Bleeding	78 (52.3)	91 (61.1)	.161	282 (84.7)	290 (87.1)	.436
Sepsis or SIRS	16 (10.7)	13 (8.7)	.696	38 (11.4)	44 (13.2)	.555
Gastric ulcer	2 (1.3)	4 (2.7)	.680	7 (2.1)	9 (2.7)	.800
Transfer to another hospital	17 (11.4)	19 (12.8)	.859	49 (14.7)	30 (9.0)	.031
Discharged to rehabilitation or nursing facility	11 (7.4)	12 (8.1)	1.000	33 (9.9)	40 (12.0)	.457
Postoperative LOS, days, median (IQR)	10 (6-18)	10 (5-19)	.519	14 (7-25)	11 (1-22)	.006
Readmission count rate, mean (SD)	125 (83.9)	118 (79.2)	.370	219 (65.8)	206 (61.9)	.333
Reoperation count rate, mean (SD)	147 (98.7)	145 (97.3)	.680	303 (91.0)	305 (91.6)	.891

ER, Endovascular repair; IQR, interquartile range; LOS, length of hospital stay; OSR, open surgical repair; SD, standard deviation; SIRS, systemic inflammatory response syndrome; TIA, transient ischemic attack.

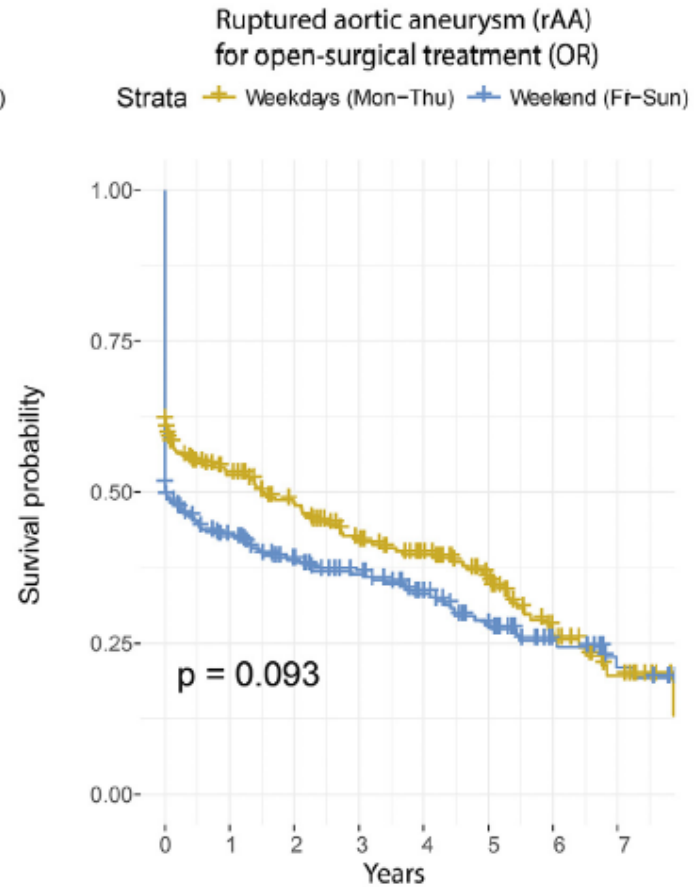
Values are reported in total numbers (%) unless otherwise indicated. Significant *P* values are marked in bold.





Number at risk

Strata	0	1	2	3	4	5	6	7
	149	55	35	22	15	8	2	1
	149	50	36	25	19	9	4	1

Years



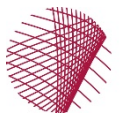
Number at risk

Strata	0	1	2	3	4	5	6	7
	333	135	109	85	70	49	24	11
	333	114	90	75	57	40	22	12

Years

Ruptured aortic aneurysm	ER			OSR		
	Hazard ratio	95% CI	<i>P</i> value	Hazard ratio	95% CI	<i>P</i> value
Procedure at the weekend (vs weekday)	0.874	0.610-1.253	.464	0.945	0.682-1.309	.732
Older age of patient (increase by 1 year)	1.037	1.018-1.055	<.001	1.052	1.033-1.072	<.001
Female sex (vs male)	0.914	0.643-1.300	.616	0.945	0.666-1.339	.749
van Walraven comorbidity score (increase by 1 point)	1.041	1.021-1.062	<.001	1.025	1.003-1.046	.024
TAA or TAAA (vs AAA)	1.310	0.916-1.874	.139	0.677	0.435-1.054	.084

AAA, Abdominal aortic aneurysm; CI, confidence interval; TAA, thoracic aortic aneurysm; TAAA, thoracoabdominal aortic aneurysm. Significant *P* values are marked in bold.



- Weekend Repair of rAAA is Associated with Worse in Hospital Survival Compared to Weekday Surgery
- Inverse Frequency of OR Compared to ER at Weekends
- ER at Weekends has a tendency to higher Mortality than at Weekdays
- No effect on long term Survival in ER and OR
- **Call for Center-based Treatment**
- **ER Team Training to Reduce Weekend Effects**

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