Supplemental Online Content

Challine A, Maggiori L, Katsahian S, et al. Outcomes associated with caustic ingestion among adults in a national prospective database in France. *JAMA Surg*. Published online December 8, 2021. doi:10.1001/jamasurg.2021.6368

eTable 1. Charlson comorbidity score calculation and codes used for description of other comorbidities

eTable 2. CCAM codes used for definition of variables

eTable 3. ICD-10 codes used to define complication during the management

eTable 4. In-hospital mortality risk factors of 3544 patients managed for caustic ingestion. Centers were categorized according to the number of oncologic esophageal resections per year in low (0-5 esophagectomies/year), middle (5-55 esophagectomies/year) and high (>55 esophagectomies/year) volume

eTable 5. In-hospital morbidity risk factors of 3544 patients managed for caustic ingestion. Centers were categorized according to the number of oncologic esophageal resections per year in low (0-5 esophagectomies/year), middle (5-55 esophagectomies/year) and high (>55 esophagectomies/year) volume

eTable 6. Early outcomes according to the nature of the ingested agent. Data were available for 1185 patients (33%) of whom 221 have ingested acids and 604 alkalis and 260 other agents

eTable 7. Characteristics and outcomes of 456 patients who underwent esophageal reconstruction after caustic ingestion with the colon (n=343) and the stomach (n=113)

eFigure. Correlation matrix of variables included in the logistic regression model

This supplemental material has been provided by the authors to give readers additional information about their work.

eTable 1. Charlson comorbidity score calculation and codes used for description of other comorbidities

Variable	Coef	ICD codes
Congestive heart failure	1	I110, I130, I132, I50, I500, I501, I509
Myocardial infarction	1	I21, I2,2 I252, I255
Peripheral vascular disease	1	I70, I700, I701, I702, I708, I709, I71, I710, I711, I712, I713, I714, I715, I716, I718, I719, I731, I738, I739, I771, I790, I792, K551, K558, K559, Z958, Z959
Cerebrovascular disease	1	G45, G450, G451, G452, G453, G454, G458, G459, G46, G460, G461, G462, G463, G464, G465, G466, G467, G468, H340, I60, I600, I601, I602, I603, I604, I605, I606, I607, I608, I609, I61, I610, I611, I612, I613, I614, I615, I616, I618, I619, I62I, 620, I621, I629, I63, I630, I631, I632, I633, I634, I635, I636, I638, I639, I64, I65, I650, I651, I652, I653, I658, I659, I66, I660, I661, I662, I663, I664, I668, I669, I67, I670, I671, I672, I673, I674, I675, I676, I677, I678, I679, I68, I680, I681, I682, I688, I69, I690, I691, I692, I693, I694, I698
Dementia	1	F00, F000, F0000, F00000, F00001, F00002, F0001, F00010, F00011, F00012, F0002, F00020, F00021, F00022, F0003, F00030, F00031, F00032, F0004, F00040, F00041, F00042, F001, F0010, F00100, F00101, F00102, F0011, F00110, F00111, F00112, F0012, F00120, F00121, F00122, F0013, F00130, F00131, F00132, F0014, F00140, F00141, F00142, F002, F0020, F00200, F00201, F00202, F0021, F00210, F00211, F00212, F0022, F00220, F00221, F00222, F0023, F00230, F00231, F00232, F0024, F00240, F00241, F00242, F009, F0090, F00900, F00901, F00902, F0091, F00910, F00911, F00912, F0092, F00920, F00921, F00922, F0093, F00930, F00931, F00932, F0094, F00940, F00941, F00942, F01, F010, F0100, F01000, F01001, F01002, F0101, F01010, F01011, F01012, F0102, F01020, F01021, F01022, F0103, F01030, F01031, F01032, F0104, F01040, F01041, F01042, F011, F0110, F01100, F01101, F01102, F0111, F01110, F01111, F01112, F0112, F01120, F01121, F01122, F0113, F01130, F01131, F01132, F0114, F01140, F01141, F01142, F012, F0120, F01200, F01201, F01202, F0121, F01210, F01211, F01212, F0122, F01220, F01221, F01222, F0123, F01230, F01231, F01232, F0124, F01240, F01241, F01242, F013, F0130, F01300, F01301, F01302, F0131, F01310, F01311, F01312, F0132, F01320, F01321, F01322, F0133, F01330, F01331, F01332, F0134, F01340, F01341, F01342, F018, F0180, F01800, F01801, F01802, F0181, F01810, F01811, F01812, F0182, F01820, F01821, F01822, F0183, F01830, F01831, F01832, F0184, F01840, F01841, F01842, F019, F0190, F01900, F01901, F01902, F0191, F01910, F01911, F01912, F0192, F01920, F01921, F01922, F0193, F01930, F01931, F01932, F0194, F01940, F01941, F01942, F02, F020, F0200, F02000, F02001, F02002, F0201, F02010, F02011, F02012, F0202, F02020, F02021, F02022, F0203, F02030, F02031, F02032, F0204, F02040, F02041, F02042, F021, F0210, F02100, F02101, F02102, F0211, F02110, F02111, F02112, F0212, F02120, F02121, F02122, F0213, F02130, F02131, F02132, F0214, F02140, F02141, F02142, F022, F0220, F02200, F02201, F02202, F0221, F02210, F02211, F02212, F0222, F02220, F02221, F02222, F0223, F02230, F02231, F02232, F0224, F02240, F02241, F02242, F023, F0230, F02300, F02301, F02302, F0231, F02310, F02311, F02312, F0232, F02320, F02321, F02322, F0233, F02330, F02331, F02332, F0234, F02340, F02341, F02342, F024, F0240, F02400, F02401, F02402, F0241, F02410, F02411, F02412, F0242, F02420, F02421, F02422, F0243, F02430, F02431, F02432, F0244, F02440, F02441, F02442, F028, F0280, F02800, F02801, F02802, F0281, F02810, F02811, F02812, F0282, F02820, F02821, F02822, F0283, F02830, F02831, F02832, F0284, F02840, F02841, F02842, F03, F03+0, F03+00, F03+01, F03+02, F03+1, F03+10, F03+11,

		F03+12, F03+2, F03+20, F03+21, F03+22, F03+3, F03+30, F03+31, F03+32, F03+4, F03+40, F03+41, F03+42, F051, G30, G300, G301, G308, G309, G311
Chronic pulmonary disease	1	(I278, I279, J40, J41, J410, J411, J418, J42, J43, J430, J431, J432, J438, J439, J44, J440, J441, J448, J449, J45, J450, J451, J458, J459, J46, J47, J60, J61, J62, J620, J628, J63, J630, J631, J632, J633, J634, J635, J638, J64, J65, J66, J660, J661, J662, J668, J67, J670, J671, J672, J673, J674, J675, J676, J677, J678, J679, J684, J701, J703
Connective tissue disease	1	M05, M050, M0500, M0501, M0502, M0503, M0504, M0505, M0506, M0507, M0508, M0509, M051, M0510, M0511, M0512, M0513, M0514, M0515, M0516, M0517, M0518, M0519, M052, M0520, M0521, M0522, M0523, M0524, M0525, M0526, M0527, M0528, M0529, M053, M0530, M0531, M0532, M0533, M0534, M0535, M0536, M0537, M0538, M0539, M058, M0580, M0581, M0582, M0583, M0584, M0585, M0586, M0587, M0588, M0589, M059, M0590, M0591, M0592, M0593, M0594, M0595, M0596, M0597, M0598, M0599, M06, M060, M0600, M0601, M0602, M0603, M0604, M0605, M0606, M0607, M0608, M0609, M061, M0610, M0611, M0612, M0613, M0614, M0615, M0616, M0617, M0618, M0619, M062, M0620, M0621, M0622, M0623, M0624, M0625, M0626, M0627, M0628, M0629, M063, M0630, M0631, M0632, M0633, M0634, M0635, M0636, M0637, M0638, M0639, M064, M0640, M0641, M0642, M0643, M0644, M0645, M0646, M0647, M0648, M0649, M068, M0680, M0681, M0682, M0683, M0684, M0685, M0686, M0687, M0688, M0689, M069, M0690, M0691, M0692, M0693, M0694, M0695, M0696, M0697, M0698, M0699, M315, M32, M320, M321, M328, M329, M33, M330, M331, M332, M339, M34, M340, M341, M342, M348, M349, M351, M353, M360
Ulcer disease	1	K25, K250, K251, K252, K253, K254, K255, K256, K257, K259, K26, K260, K261, K262, K263, K264, K265, K266, K267, K269, K27, K270, K271, K272, K273, K274, K275, K276, K277, K279, K28, K280, K281, K282, K283, K284, K285, K286, K287, K289
Mild liver disease	1	B18, B180, B181, B182, B188, B189, K70, K700, K701, K702, K703, K704, K709, K713, K714, K715, K717, K73, K730, K731, K732, K738, K739, K74, K740, K741, K742, K743, K744, K745, K746, K760, K762, K763, K764, K768, K769, Z944
Diabetes	1	E100, E101, E106, E108, E109, E110, E111, E116, E118, E119, E120, E121, E126, E128, E129, E130, E131, E136, E138, E139, E140, E141, E146, E148, E149
Hemiplegia	2	G041, G114, G801, G802, G81, G810, G8100, G8101, G8108, G811, G819, G82, G820, G821, G822, G823, G824, G825, G830, G831, G832, G833, G834, G839
Moderate or severe renal disease	2	I120, I131, N032, N033, N0330, N0339, N034, N035, N036, N037, N052, N053, N054, N055, N056, N057, N18, N180, N181, N182, N183, N184, N185, N188, N189, N19, N250, Z490, Z491, Z492, Z940, Z992, Z992+0, Z992+1, Z992+8
Diabetes with end organ damage	2	E102, E103, E104, E105, E107, E112, E1120, E1128, E113, E1130, E1138, E114, E1140, E1148, E115, E117, E122, E123, E124, E125, E127, E132, E133, E134, E135, E137, E142, E143, E144, E145, E147
Cancer	2	C00, C000, C001, C002, C003, C004, C005, C006, C008, C009, C01, C02, C020, C021, C022, C023, C024, C028, C029, C03, C030, C031, C039, C04, C040, C041, C048, C049, C05, C050, C051, C052, C058, C059, C06, C060, C061, C062, C068, C069, C07, C08, C080, C081, C088, C089, C09, C090, C091, C098, C099, C10, C100, C101, C102, C103, C104, C108, C109, C11, C110, C111, C112, C113, C118, C119, C12, C13, C130, C131, C132, C138, C139, C14, C140, C142, C148, C15, C150, C151, C152, C153, C154, C155, C158, C159, C16, C160, C161, C162, C163, C164, C165, C166, C168, C169, C169+0, C169+8, C17, C170, C171, C172, C173, C178, C179, C18, C180, C181, C182, C183, C184, C185, C186, C187, C188, C189, C189+0, C189+8, C19, C20, C21, C210, C211, C212, C218, C22, C220, C221, C222, C223, C224, C227, C229, C23, C24, C240, C241, C248, C249, C25, C250, C251, C252, C253, C254, C254+0, C254+8, C257, C258, C259, C259+0, C259+8, C26, C260, C261, C268, C269, C30, C300, C301, C31, C310, C311, C312, C313, C318, C319, C32, C320, C321, C322, C323, C328, C329, C33, C34, C340, C341, C342, C343, C348, C349, C37, C38, C380, C381, C382, C383,

		C384, C388, C39, C390, C398, C399, C40, C400, C401, C402, C403, C408, C409, C41, C410, C411, C412, C413, C414, C418, C419, C43, C430, C431, C432, C433, C434, C435, C436, C437, C438, C439, C45, C450, C451, C452, C457, C459, C46, C460, C461, C462, C463, C467, C4670, C4671, C4672, C4678, C468, C469, C47, C470, C471, C472, C473, C474, C475, C476, C478, C479, C48, C480, C481, C482, C488, C49, C490, C491, C492, C493, C4930, C4938, C494, C4940, C4948, C495, C4950, C4958, C496, C498, C499, C50, C500, C501, C502, C503, C504, C505, C506, C508, C509, C51, C510, C511, C512, C518, C519, C52, C53, C530, C531, C538, C539, C54, C540, C541, C542, C543, C548, C549, C55, C56, C57, C570, C571, C572, C573, C574, C577, C578, C579, C58, C60, C600, C601, C602, C608, C609, C61, C62, C620, C621, C629, C63, C630, C631, C632, C637, C638, C639, C64, C65, C66, C67, C670, C671, C672, C673, C674, C675, C676, C677, C678, C679, C68, C680, C681, C688, C689, C69, C690, C691, C692, C693, C694, C695, C696, C698, C699, C70, C700, C701, C709, C71, C710, C711, C712, C713, C714, C715, C716, C717, C718, C719, C72, C720, C721, C722, C723, C724, C725, C728, C729, C73, C74, C740, C741, C749, C75, C750, C751, C752, C753, C754, C755, C758, C759, C76, C760, C761, C762, C763, C764, C765, C767, C768, C81, C810, C811, C812, C813, C814, C817, C819, C82, C820, C821, C822, C823, C824, C825, C826, C827, C829, C83, C830, C831, C832, C833, C834, C835, C836, C837, C838, C839, C84, C840, C841, C842, C843, C844, C845, C846, C847, C848, C849, C85, C850, C851, C852, C857, C859, C88, C880, C881, C882, C883, C884, C887, C889, C90, C900, C901, C902, C903, C91, C910, C911, C912, C913, C914, C915, C916, C917, C918, C919, C92, C920, C921, C922, C923, C924, C925, C926, C927, C928, C929, C93, C930, C931, C932, C933, C937, C939, C94, C940, C941, C942, C943, C944, C945, C946, C947, C95, C950, C951, C952, C957, C959, C96, C960, C961, C962, C963, C964, C965, C966, C967, C968, C969, C97
Moderate or severe liver disease	3	I850, I859, I864, I982, K704, K711, K721, K729, K765, K766, K767
Metastatic cancer	6	C77, C770, C771, C772, C773, C774, C775, C778, C779, C78, C780, C781, C782, C783, C784, C785, C786, C787, C788, C79, C790, C791, C792, C793, C794, C795, C796, C797, C798, C799, C80, C80+0, C800, C809
AIDS	6	B20, B200, B201, B202, B203, B204, B205, B206, B207, B208, B209, B21, B210, B211, B212, B213, B217, B218, B21, B22, B220, B221, B222, B227, B24, B24+0, B24+1, B24+9, Z21
Others comorbities		
Mental disease		F00-F09, F10-F19, F20-F29, F30-F39, F40-F48, F70-F79
Accidental ingestion		X49

eTable 2. CCAM codes used for definition of variables

Endoscopy	Diagnostic exams	HEQE001 HEQE002 HEQE005
CT scanner	Abdominal CT-scanner	ZCQH001 ZCQH002 ZCQK004 ZCQK005
	Thoracic CT-scanner	ZBQH001 ZBQK001 ZZQH033 ZZQK024 ECQH010 ECQH011 ZZQP004
ICU variables	Ventilatory assistance	GLLD008 GLLD002 GLLD003 GLLD006 GLLD004
	Blood transfusion	FELF001 FELF002 FELF003 FELF004 FELF005 FELF006 FELF007 FELF008 FELF011
Emergency surgical variables	Esophageal resection	HEFA020 HEFA022 HEFA005 HEFA011
	Gastric resection	HFFA002 HFFA003 HFFA005 HFFA006 HFFA009 HFFC002 HFFC012 HFFC017
	Pancreatic resection	HNFA004 HNFA006 HNFA007 HNFA008 HNFA011 HNFA013 HNFC002
	Colic resection	HHFA002 HHFA006 HHFA010 HHFA014 HHFA017 HHFA024 HHFC040 HHFA003 HHFA008 HHFA009 HHFA026 HHFC296 HHFA018 HHFA023 HHFA004 HHFA005 HHFA021 HHFA022 HHFA028 HHFA029 HHFA030 HHFA031 HHFA027 HJFA008 HJFA008 HJFA009
	Intestinal resection	HGFA003 HGFA004 HGFA007 HGFA013
	Splenic resection	FFFA001
	Surgical abdominal exploration	ZCQA001 ZCQC002
	Surgical thoracic exploration	GHQA001 GHQC001 ZBQA002 ZBQC001
	Enteral nutrition with jejunostoma	HGCH001 HGLA001 HGCC026 HGCA008
Reconstructive surgery	Coloplasty / colic transplant	HEMA005 HEMA001 HEFA006 HEFA007 HEFA009 HEFA016 HEFA017
	Gastroplasty / gastric transplant	HEMA008 HEMA009 HEFA001 HEFA002 HEFA003 HEFA004 HEFA008 HEFA012 HEFA013 HEFA018 HEFC800 HEFC801
	Intestinal transplant	HEMA006

eTable 3. ICD-10 codes used to define complication during the management

Bleeding	K280	Gastrojejunal ulcer acute with haemorrhage
	K661	Haemoperitoneum
	R58	Haemorrhage, not elsewhere classified
	T810	Haemorrhage and haematoma complicating a procedure, not elsewhere classified
Deep abdominal abscess	K61	Abscess of anal and rectal regions
	K630	Abscess of intestine
	K750	Abscess of liver
	T814	Infection following a procedure, not elsewhere classified
Thrombo-embolic diseases	I26	Pulmonary embolism
	I80	Phlebitis and thrombophlebitis
	I81	Portal vein thrombosis
Respiratory failure	J80	Adult respiratory distress syndrome
	J952	Acute pulmonary insufficiency following nonthoracic surgery
	J960	Acute respiratory failure
	J969	Respiratory failure, unspecified
	J981	Pulmonary collapse
pneumonia	J12	Viral pneumonia, not elsewhere classified
	J13	Pneumonia due to Streptococcus pneumoniae
	J14	Pneumonia due to Haemophilus influenzae
	J15	Bacterial pneumonia, not elsewhere classified
	J16	Pneumonia due to other infectious organisms, not elsewhere classified
	J17	Pneumonia in diseases classified elsewhere
	J18	Pneumonia, organism unspecified
	J69	Pneumonitis due to solids and liquids
	J690	Pneumonitis due to food and vomit
	J85	Abscess of lung and mediastinum
	J850	Gangrene and necrosis of lung
	J851	Abscess of lung with pneumonia
	J852	Abscess of lung without pneumonia
	J853	Abscess of mediastinum
	J86	Pyothorax
	J860	Pyothorax with fistula
	J869	Pyothorax without fistula
	J954	Mendelson syndrome
Renal failure	N17	Acute renal failure
	N170	Acute renal failure with tubular necrosis
	N171	Acute renal failure with acute cortical necrosis
	N172	Acute renal failure with medullary necrosis
	N178	Other acute renal failure
	N179	Acute renal failure, unspecified
	N19	Unspecified kidney failure
	N990	Postprocedural renal failure
	R34	Anuria and oliguria
Urinary infection	N10	Acute tubulo-interstitial nephritis
	N12	Tubulo-interstitial nephritis, not specified as acute or chronic
	N136	Pyonephrosis
	N151	Renal and perinephric abscess
	N30	Cystitis
	N390	Urinary tract infection, site not specified

eTable 4. In-hospital mortality risk factors of 3544 patients managed for caustic ingestion. Centers were categorized according to the number of oncologic esophageal resections per year in low (0-5 esophagectomies/year), middle (5-55 esophagectomies/year) and high (>55 esophagectomies/year) volume

	Univariate analysis				Multivariate analysis	
	Alive n=3250	**Death n=294**	**p value**		**Odds-Ratio (CI 95%)**	**p value**
Age in years	47 [32, 61]*	65 [55, 78]	< 0.001		1.06 (1.05-1.07)	< 0.001
Gender (female)	1537 (47.3%)†	148 (50.3%)	0.35		NA	NA
Charlson comorbidity index	0.8 ± 1.9‡	1.5 ± 2.6	< 0.001		1.13 (1.07-1.19)	< 0.001
Accidental ingestion	371 (11.4%)	10 (3.4%)	< 0.001		0.29 (0.14-0.54)	< 0.001
ICU admission	992 (30.5%)	181 (61.6%)	< 0.001		4.71 (3.39-6.60)	< 0.001
Emergency resection for necrosis	292 (9.0%)	96 (32.7%)	< 0.001		3.59 (2.58-5.00)	< 0.001
Center volume§						
High	1,100 (33.8%)	122 (41.5%)			Reference	
Middle	1118 (34.4%)	88 (29.9%)	0.02		0.88 (0.622-1.244)	0.26
Low	1,100 (33.8%)	122 (41.5%)			1.63 (1.161-2.297)	0.04

---

* Median [Interquartile range]
† Number of patients (percentage of patients)
‡ Mean ± standard deviation
§ Center volume was graded as low (<5 patients/year), middle (5-55 patients/year) and high (>55 patients/year)

eTable 5. In-hospital morbidity risk factors of 3544 patients managed for caustic ingestion. Centers were categorized according to the number of oncologic esophageal resections per year in low (0-5 esophagectomies/year), middle (5-55 esophagectomies/year) and high (>55 esophagectomies/year) volume

	Univariate analysis				Multivariate analysis		
	No morbidity n= 2346	Morbidity n= 1198	p value		Odds-Ratio (CI 95%)		p value
Age in years	46 [31, 61] [*]	53 [41, 66]	< 0.001		1.02 (1.02-1.03)		< 0.001
Gender (female)	1118 (47.7%)[†]	567 (47.3%)	0.88		NA		NA
Charlson comorbidity index	0.8 ± 2.0[‡]	0.9 ± 2.1	0.20		1.07(1.03-1.11)		< 0.001
Accidental ingestion	280 (11.9%)	101 (8.4%)	0.002		0.79 (0.60-1.04)		0.09
ICU[§] admission	544 (23.2%)	874 (73.0%)	< 0.001		7.95 (6.64-9.55)		< 0.001
Emergency resection for necrosis	94 (4.0%)	294 (24.5%)	< 0.001		2.79 (2.14-3.67)		< 0.001
Center Volume[**]							
High	685 (29.2%)	431 (36.0%)			Reference		
Middle	787 (33.5%)	419 (35.0%)	< 0.001		0.83 (0.68-1.01)		0.06
Low	874 (37.3%)	348 (29.0%)			0.94 (0.76-1.16)		0.54

[*] Median [Interquartile range]
[†] Number of patients (percentage of patients)
[‡] Mean ± standard deviation
[§] ICU: Intensive Care Unit
[**] Center volume was graded as low (<5 patients/year), middle (5-55 patients/year) and high (>55 patients/year)

eTable 6. Early outcomes according to the nature of the ingested agent. Data were available for 1185 patients (33%) of whom 221 have ingested acids and 604 alkalis and 260 other agents

	Total (n=1185)	Acid Agent (n=221)	Alkali Agent (n=604)	Other Agent[*] (n=360)	p-value[†]
In-hospital mortality	112 (9.5)	26 (11.8)	58 (9.6)	28 (7.8)	0.28
Inhospital morbidity	505 (42.6)	101 (45.7)	245 (40.6)	159 (44.2)	0.32
Pulmonary complication	398 (33.6)	76 (34.4)	193 (32.0)	129 (35.8)	0.50
Renal Failure	72 (6.1)	19 (8.6)	33 (5.5)	20 (5.6)	0.22
Hepatic Failure	3 (0.0)	0 (0.0)	2 (0.1)	1 (0.0)	0.71

[*] Includes oxidants, phenols, ammonia and other organic corrosives
[†] Compares acid versus alki ingestion

eTable 7. Characteristics and outcomes of 456 patients who underwent esophageal reconstruction after caustic ingestion with the colon (n=343) and the stomach (n=113).

	Esophageal reconstruction (n=456)	With the colon (n=343)	With the stomach[#] (n=113)	p-value
Female[*]	225 (49.3)	173 (50.4)	52 (46.0)	0.48
Age[†]	47 [36.0, 56.9]	47 [35.7, 56.0]	46.9 [36.4, 58.4]	0.37
Delay in reconstruction (months)	6 [3, 10]	4 [1-9]	6 [3-10]	0.004
Center volume[‡]				
High	223 (48.9)	178 (51.9)	45 (39.8)	
Middle	204 (44.7)	146 (42.6)	58 (51.3)	0.06
Low	29 (6.4)	19 (5.5)	10 (8.8)	
In hospital mortality	22 (4.8)	17 (5.0)	5 (4.4)	1.00
In hospital morbidity	323 (70.8)	248 (72.3)	75 (66.4)	0.28
Bleeding	30 (6.6)	20 (5.8)	10 (8.8)	0.37
Thromboembolic disease	33 (7.2)	27 (7.9)	6 (5.3)	0.48
Pulmonary complications	248 (54.4)	189 (55.1)	59 (52.2)	0.67
Renal failure	44 (9.6)	36 (10.5%)	8 (7.1)	0.38

[#] Esophageal reconstruction with the stomach included 39 Ivor Lewis operations, 58 McKeown procedures and 16 retrosternal gastroplasties.
[*] Number of patients (percentage of patients)
[†] Median [Interquartile range]
[‡] Center volume was graded as low (<2 patients/year), middle (2-9 patients/year) and high (>9 patients/year)

eFigure. Correlation matrix of variables included in the logistic regression model