

Supplemental Material

Supplemental Table 1. Study Characteristics

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Supplemental References

Supplemental Table 1. Study Characteristics

* Outlier Study

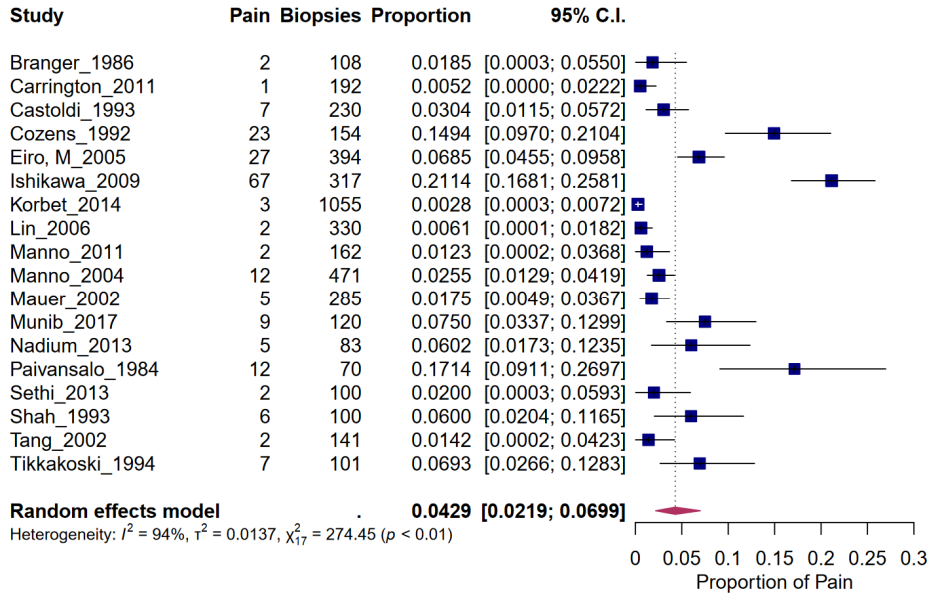
^ Influential Study

First Author	Country	Year	Study Design	Average Age	% Female	Biopsies (n)	Pain (n)	Hematomas (n)	Macroscopic Hematuria (n)	Erythrocyte Transfusion (n)	Surgical Intervention (n)	Death (n)
Al Turk* ^{^1}	USA	2018	Cohort	55	48	118064	NR	NR	15230*	30815* [^]	165	2125* [^]
Altindal ²	Turkey	2015	CC	40	40	290	NR	NR	NR	6	2	1
Arora ³	India	2012	RCT	NR	NR	50	NR	1	1	0	0	0
Azhar ⁴	Pakistan	2005	Cohort	NR	NR	200	NR	NR	NR	NR	NR	0
Bataille ⁵	France	2012	Cohort	55	41	535	NR	2	NR	2	3	0
Branger ⁶	France	1985	RCT	NR	NR	108	2	2	2	NR	NR	NR
Carrington ⁷	Wales	2011	Cohort	52	2	192	1	2	4	2	2	0
Castoldi ⁸	Italy	1993	Cohort	NR	NR	230	7	96	16	NR	2	0
Chen ⁹	USA	2012	Cohort	37	86	219	NR	NR	NR	5	3	0
Chikamatsu* ¹⁰	Japan	2017	Cohort	62	39	252	NR	NR	36*	12	2	0
Chunduri* ¹¹	USA	2015	Cohort	47	68	137	NR	44	1	10	4*	0
Cluzel ¹²	France	2000	CC	49	26	400	NR	1	2	1	3	0
Cozens ¹³	UK	1992	Cohort	47	41	154	23	NR	7	3	2	0
Cui ¹⁴	USA	2016	Cohort	56	49	86	NR	25	NR	NR	2	0
DiPalma ¹⁵	Italy	2010	Cohort	68	36	110	NR	10	1	0	0	0
Doyle ¹⁶	USA	1994	Cohort	32	50	155	NR	10	8	NR	1	0
Eiro, M ¹⁷	Japan	2005	Cohort	44	NR	394	27	149	29	0	0	0
Elahi ¹⁸	Pakistan	2017	Cohort	36	36	75	NR	20	5	NR	NR	0
Esposito ¹⁹	Italy	2018	Cohort	58	30	337	NR	NR	NR	NR	NR	0
Fisi* ²⁰	Hungary	2012	Cohort	49	42	353	NR	160	NR	2	8*	0
Gesualdo ²¹	Italy	2008	Cohort	45	NR	110	NR	NR	NR	NR	1	0
Granata ²²	Italy	2011	CC	NR	43	561	NR	15	21	2	1	0
Guerrero ²³	Spain	2014	Cohort	56	NR	180	NR	9	4	NR	3	0
Helenius ²⁴	Finland	1983	RCT	39	50	57	NR	7	NR	NR	NR	0
Hojs ²⁵	Slovenia	2004	Cohort	45	45	144	NR	2	4	0	0	0
Ilsam ²⁶	USA	2010	Cohort	44	38	56	NR	11	5	4	0	0
Ishikawa* ^{^27}	Japan	2009	Cohort	45	46	317	67*	273* [^]	12	1	0	0
Jordan* ²⁸	UK	2014	Cohort	35	86	215	NR	29	3	8	6*	1
Joseph ²⁹	USA	2010	Cohort	41	73	170	NR	44	NR	13	NR	0
Khajehdehi ³⁰	USA	1999	Cohort	NR	45	59	NR	NR	3	NR	NR	NR
Kitterer ³¹	Germany	2015	Cohort	58	39	205	NR	37	NR	3	1	0
Kohli ³²	India	2006	Cohort	39	32	210	NR	1	11	4	0	NR
Korbet ³³	USA	2014	Cohort	46	62	1055	3	92	76	56	11	1
Kriegshauser ³⁴	USA	2015	Cohort	59	43	293	NR	NR	NR	NR	NR	0
Lees ³⁵	Scotland	2017	Cohort	57	43	2563	NR	NR	NR	46	9	1
Lin ³⁶	Taiwan	2006	Cohort	46	NR	330	2	55	21	2	NR	0
Lubomirova ³⁷	Bulgaria	2014	Cohort	46	48	230	NR	15	NR	NR	NR	NR
Mackinnon ³⁸	UK	2008	Cohort	56	40	1120	NR	2	4	15	2	0
Mai ³⁹	Australia	2013	Cohort	NR	47	934	NR	19	13	8	0	0

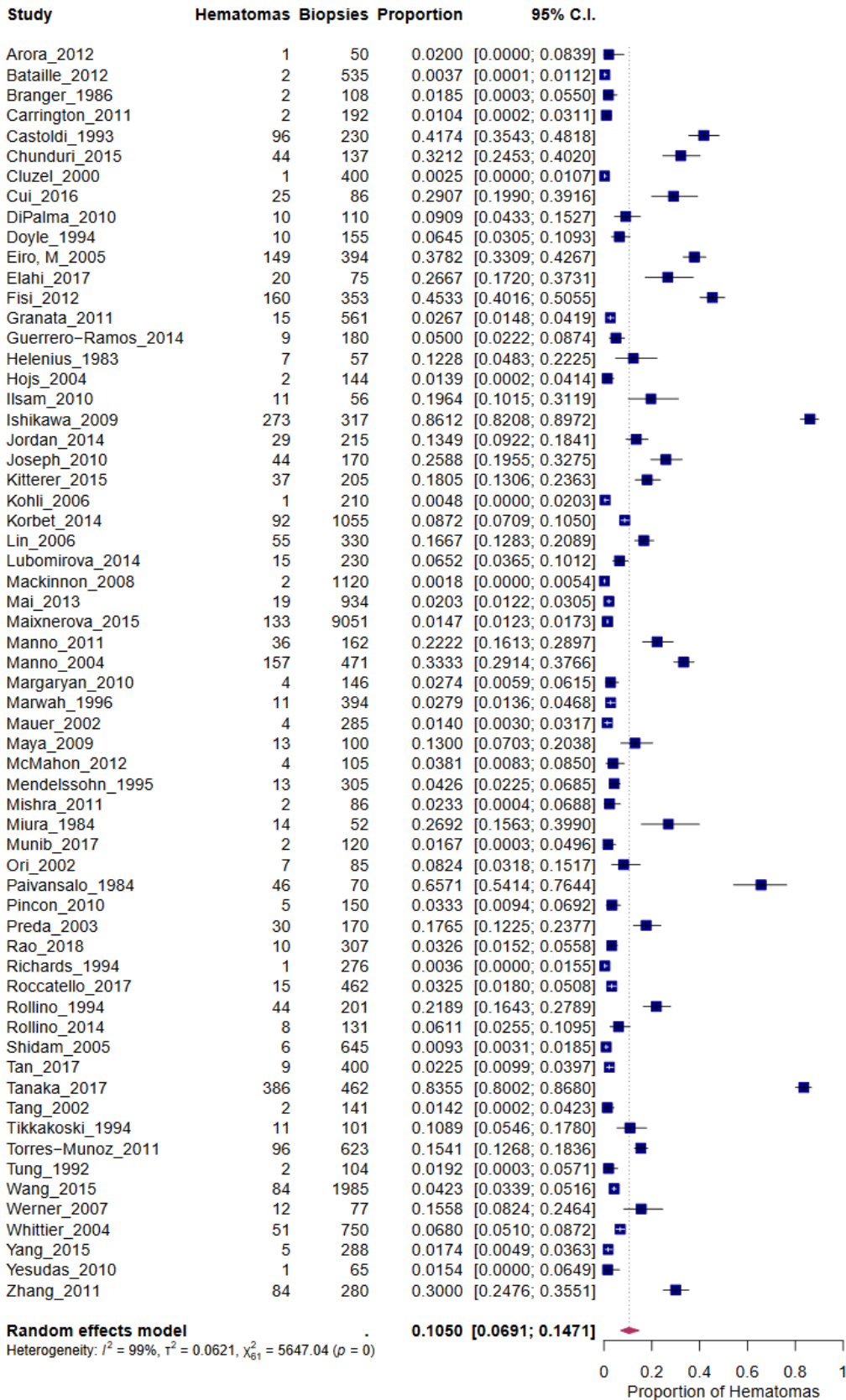
Maixnerova ⁴⁰	Czech Rep	2015	Cohort	45	42	9051	NR	133	138	NR	NR	NR
Manno ⁴¹	Italy	2011	RCT	41	NR	162	2	36	0	0	0	0
Manno ⁴²	Italy	2004	RCT	39	41	471	12	157	2	2	4	0
Margaryan ⁴³	USA	2010	Cohort	44	56	146	NR	4	2	1	0	0
Marwah ⁴⁴	USA	1996	Cohort	44	2	394	NR	11	23	22	3	0
Mauer ⁴⁵	USA	2002	RCT	30	53	285	5	4	8	NR	0	0
Maya ⁴⁶	USA	2009	Cohort	42	60	100	NR	13	NR	0	0	0
McMahon ⁴⁷	USA	2012	Cohort	49	NR	105	NR	4	5	NR	1	0
Mendelssohn ⁴⁸	Canada	1995	Cohort	NR	NR	305	NR	13	27	NR	0	0
Mishra ⁴⁹	Libya	2011	Cohort	NR	73	86	NR	2	2	NR	1	0
Miura ⁵⁰	Japan	1984	Cohort	38	46	52	NR	14	3	0	0	0
Munib ⁵¹	Pakistan	2017	Cohort	28	32	120	9	2	9	2	0	0
Nadium ⁵²	Sudan	2013	Cohort	34	44	83	5	NR	4	2	0	0
Nyman ⁵³	Saudi Arabia	1997	Cohort	NR	57	168	NR	NR	NR	NR	NR	0
Ori ⁵⁴	Israel	2002	Cohort	53	47	85	NR	7	1	4	0	0
Paivansalo* ⁵⁵	Finland	1984	Cohort	41	44	70	12	46*	NR	NR	NR	0
Pendon-Ruiz ⁵⁶	Spain	2014	Cohort	49	3	241	NR	NR	19	9	2	NR
Pincon ⁵⁷	France	2010	Cohort	77	48	150	NR	5	1	3	0	0
Prasad ⁵⁸	India	2015	Cohort	34	31	2138	NR	NR	NR	NR	NR	0
Preda ⁵⁹	Netherlands	2003	Cohort	NR	NR	170	NR	30	3	4	NR	0
Rao ⁶⁰	India	2018	CC	37	40	307	NR	10	19	2	4	0
Richards ⁶¹	UK	1994	Cohort	41	NR	276	NR	1	8	2	NR	0
Roccatello ⁶²	Italy	2017	Cohort	55	39	462	NR	15	12	NR	6	0
Rollino ⁶³	Italy	1994	RCT	NR	NR	201	NR	44	21	NR	NR	0
Rollino ⁶⁴	Italy	2014	Cohort	79	45	131	NR	8	3	NR	1	0
Rychlik ⁶⁵	Czech Rep	2004	Cohort	42	41	4004	NR	NR	273	NR	NR	NR
Sakaci ⁶⁶	Turkey	2015	Cohort	71	38	78	NR	NR	1	0	0	0
Sakhujja ⁶⁷	India	1990	Cohort	NR	NR	150	NR	NR	9	1	0	0
Sethi ⁶⁸	USA	2013	Cohort	47	59	100	2	NR	NR	8	1	0
Shah ⁶⁹	Singapore	1993	Cohort	32	NR	100	6	NR	4	NR	NR	0
Shidam ⁷⁰	USA	2005	Cohort	42	50	645	NR	6	12	16	4	0
Soares ⁷¹	USA	2008	Cohort	NR	44	289	NR	NR	NR	6	5	0
Sosa-Barrios ⁷²	Spain	2017	Cohort	44	58	175	NR	NR	NR	NR	NR	0
Tabatabai ⁷³	USA	2009	CC	NR	61	1116	NR	NR	NR	24	8	0
Tan ⁷⁴	China	2017	Cohort	40	50	400	NR	9	1	NR	NR	0
Tanaka* ^{A75}	Japan	2017	Cohort	50	47	462	NR	386* ^A	5	2	0	0
Tang ⁷⁶	Hong Kong	2002	Cohort	NR	NR	141	2	2	5	2	2	0
Tikkakoski ⁷⁷	Finland	1994	Cohort	43	47	101	7	11	3	2	0	0
Tondel ⁷⁸	Norway	2012	Cohort	51	NR	8573	NR	NR	167	78	17	NR
Torres-Munoz ⁷⁹	Mexico	2011	Cohort	34	71	623	NR	96	10	11	3	0
Tung ⁸⁰	UK	1992	Cohort	45	38	104	NR	2	4	3	1	0
Wang ⁸¹	China	2015	Cohort	40	41	1985	NR	84	57	71	16	0

Werner ⁸²	Israel	2007	Cohort	46	38	77	NR	12	6	0	0	0
Whittier ⁸³	USA	2004	Cohort	NR	NR	750	NR	51	56	38	5	2
Yamamoto ⁸⁴	Japan	2015	Cohort	45	48	15191	NR	NR	NR	76	15	9
Yang ⁸⁵	China	2015	Cohort	67	39	288	NR	5	4	0	0	0
Yesudas ⁸⁶	India	2010	Cohort	43	44	65	NR	1	2	0	1	0
Zhang ⁸⁷	China	2011	Cohort	40	44	280	NR	84	20	0	0	0

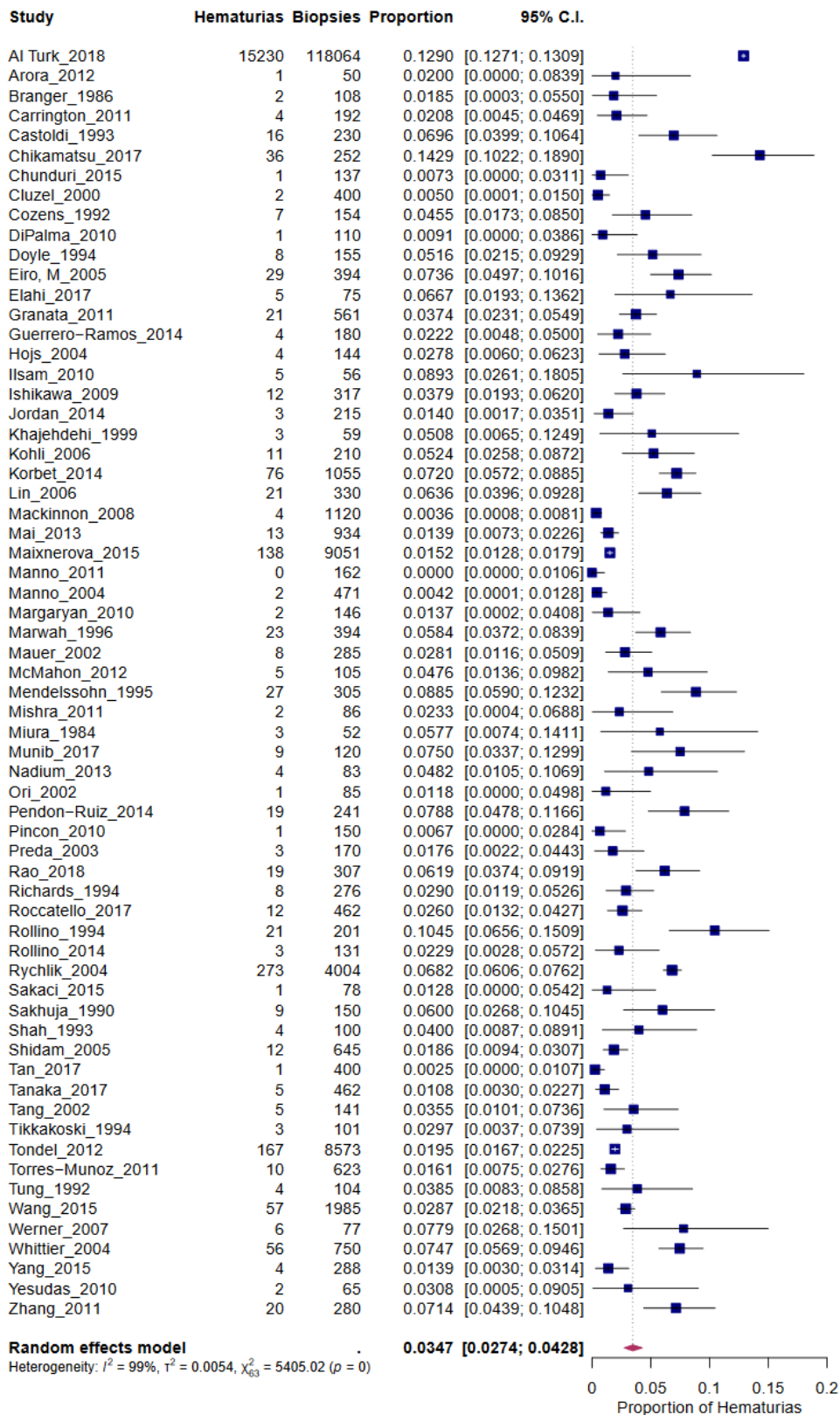
Supplemental Figure 1. Overall Pain Forest Plot



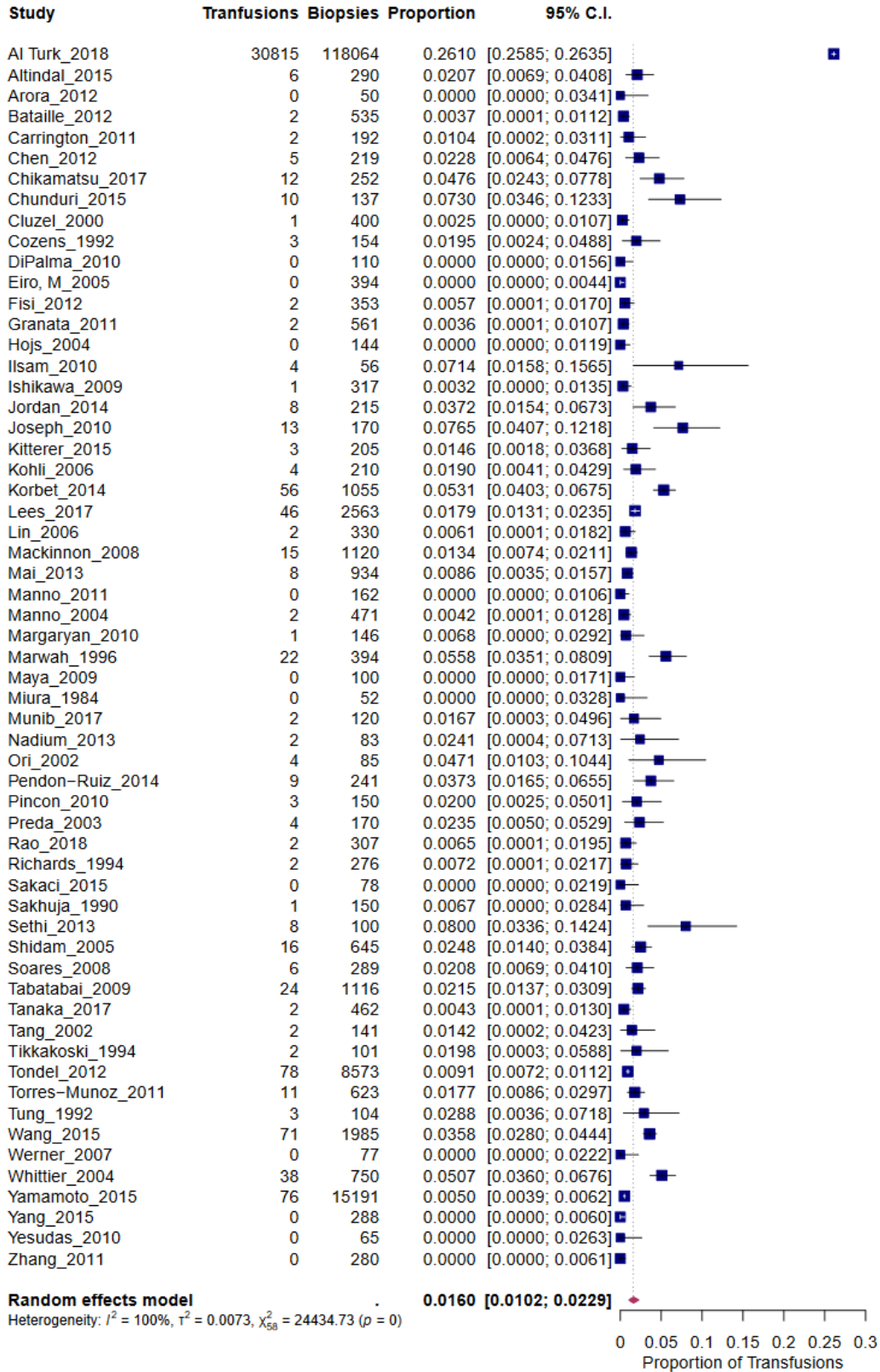
Supplemental Figure 2. Overall Hematoma Forest Plot



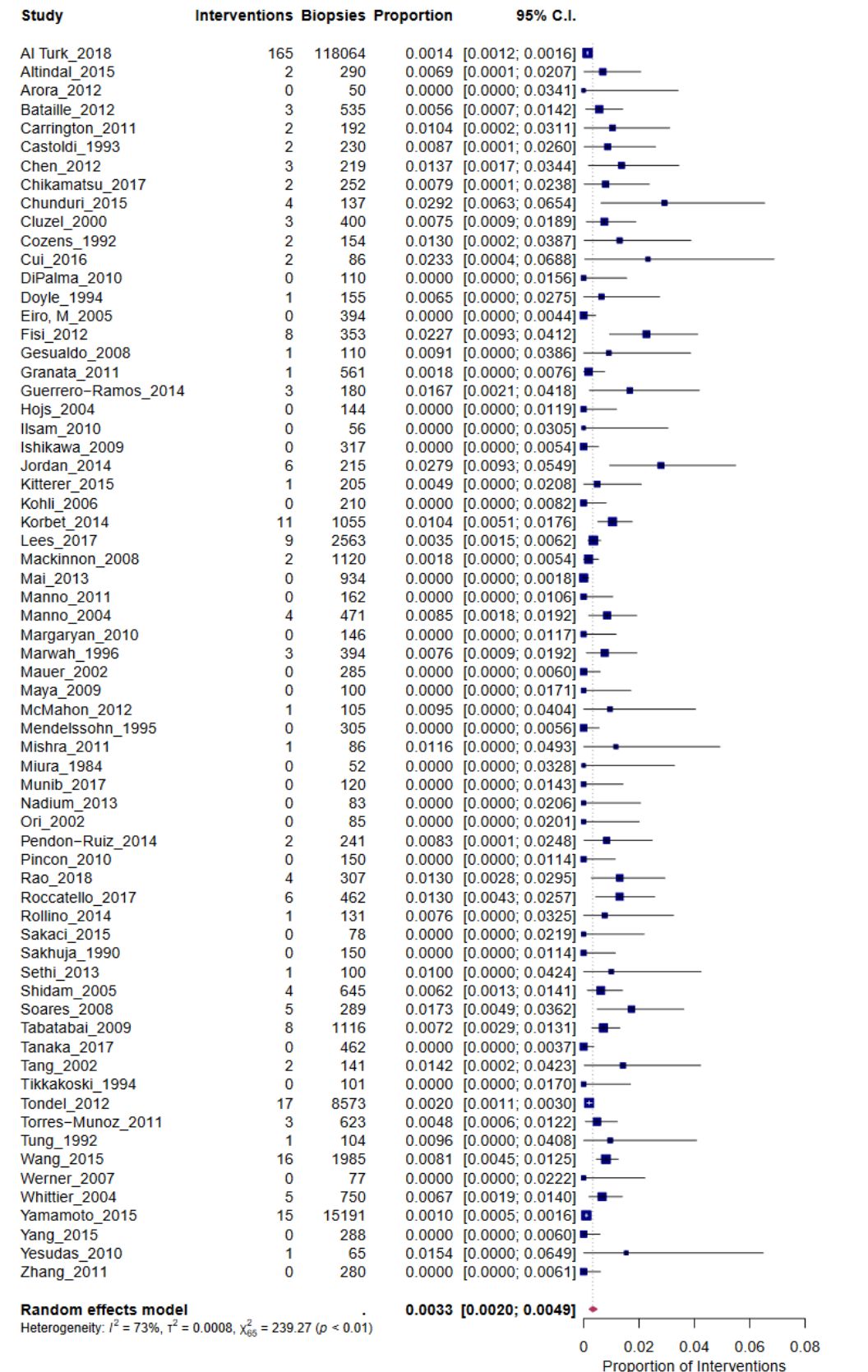
Supplemental Figure 3. Overall Macroscopic Hematuria Forest Plot



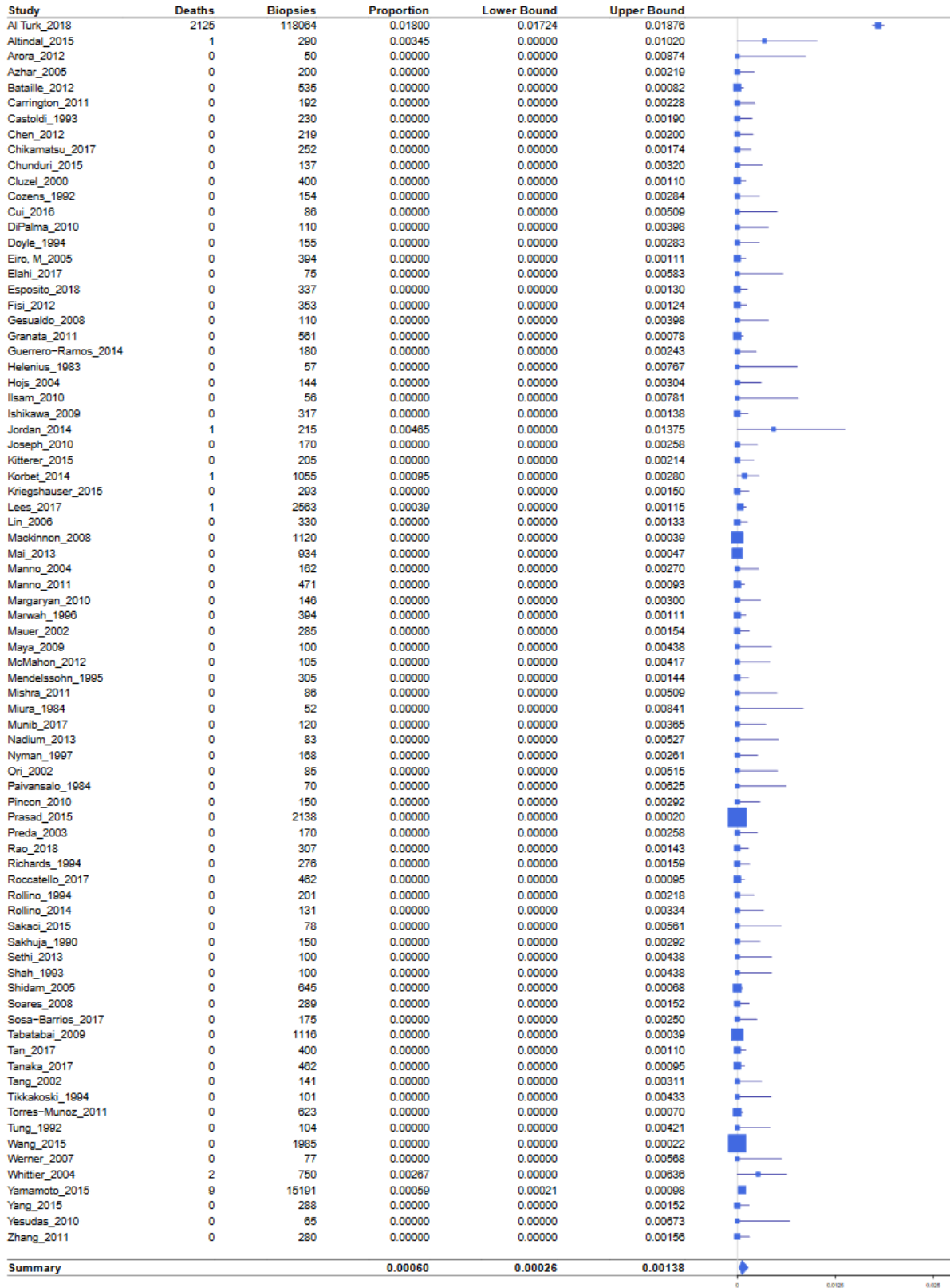
Supplemental Figure 4. Overall Erythrocyte Transfusion Forest Plot



Supplemental Figure 5. Overall Surgical/IR Intervention Forest Plot



Supplemental Figure 6. Overall Death Forest Plot



Supplemental References

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