

Table S1. DSD Characteristics of Patients with AFG.

Pt #	Sex	Phenotype Category	Specific Phenotype	Number of DSD Phenotypes
1	46,XX	Internal	Primary amenorrhea	1
2	46,XX	Internal	Aplasia of the uterus	1
3	46,XX	External	Abnormality of the labia	1
4	46,XX	Both	Aplasia of the uterus, fused labia minora, vaginal atresia	2+
5	46,XX	Internal	Aplasia of the uterus, vaginal atresia	2+
6	46,XX	Internal	Primary amenorrhea	1
7	46,XX	Internal	Aplasia of the uterus, hypoplasia of the vagina	2+
8	Other	Unspecified	Abnormality of the female genitalia	1
9	46,XX	Internal	Abnormality of the uterus	1
10	46,XX	Unspecified	Female pseudohermaphroditism	1
11	46,XX	External	Abnormality of the labia	1
12	Other	Unspecified	Abnormality of the female genitalia	1
13	Other	Both	Adrenogenital syndrome, aplasia/hypoplasia of the breasts, uterine neoplasm	2+
14	46,XX	Both	Absent nipple, primary amenorrhea	2+
15	46,XX	Internal	Primary amenorrhea	1
16	Unknown	Internal	Secondary amenorrhea	1
17	Unknown	Internal	Primary amenorrhea	1
18	Unknown	Both	Aplasia of the uterus, hypoplasia of the vagina, absent nipple	2+
19	46,XX	External	Fused labia minora	1
20	46,XX	Internal	Secondary amenorrhea	1
21	46,XX	Internal	Ovarian cyst	1
22	46,XX	Internal	Abnormality of the vagina	1
23	46,XX	Internal	Primary amenorrhea	1
24	46,XX	External	Abnormality of the labia	1
25	46,XX	External	Clitoral hypertrophy	1
26	46,XX	External	Abnormality of the uterus, aplasia/hypoplasia of the breasts	2+
27	46,XX	External	Abnormality of the labia	1
28	46,XX	Internal	Abnormality of the uterus, abnormality of the vagina	2+
29	46,XX	Unspecified	Abnormality of the female genitalia	1

30	46,XY	Male	Abnormality of the female genitalia, abnormality of the male genitalia	2+
31	46,XX	Internal	Secondary amenorrhea	1
32	46,XX	Internal	Ovarian cyst	1
33	46,XX	External	Abnormality of the labia	1
34	46,XX	Unspecified	Abnormality of the female genitalia	1
35	46,XX	Unspecified	Abnormality of the female genitalia	1
36	46,XX	Internal	Ovarian cyst	1
37	46,XX	External	Abnormality of the labia	1
38	46,XX	External	Abnormality of the labia	1
39	46,XX	External	Abnormality of the labia	1
40	46,XX	External	Clitoral hypertrophy	1
41	46,XX	Unspecified	N/A	N/A
42	46,XX	Internal	Ovarian cyst	1
43	46,XX	Internal	Secondary amenorrhea	1
44	46,XX	Unspecified	Abnormality of the female genitalia	1
45	46,XX	Internal	Bicornuate uterus	1
46	46,XX	Internal	Ovarian cyst	1
47	46,XX	Internal	Abnormality of the ovary	1
48	46,XX	External	Abnormality of the labia	1
49	46,XX	Internal	Secondary amenorrhea	1
50	46,XX	External	Abnormality of the labia	1
51	46,XX	Internal	Premature ovarian insufficiency	1
52	46,XX	Both	Labial hypertrophy, rectovaginal fistula	2+
53	46,XX	External	Abnormality of the labia	1
54	46,XX	Internal	Intrauterine growth retardation, premature ovarian insufficiency	2+
55	46,XX	Internal	Secondary amenorrhea	1
56	46,XX	Unspecified	Abnormality of the female genitalia	1
57	46,XX	Internal	Vaginal atresia	1
58	46,XX	Internal	Abnormality of female internal genitalia, mild intrauterine growth retardation	2+
59	46,XX	Unspecified	Abnormality of the female genitalia	1
60	46,XX	Internal	Urogenital sinus anomaly	1
61	46,XX	Internal	Bicornuate uterus	1

62	46,XX	Both	Clitoral hypertrophy, intrauterine growth retardation	2+
63	46,XY	External	Abnormality of the labia	1
64	46,XX	Internal	Polycystic ovaries	1
65	46,XX	External	Hypoplastic labia minora	1
66	46,XX	Internal	Ovarian cyst, precocious puberty in females	2+
67	46,XX	Internal	Premature ovarian insufficiency	1
68	46,XX	Unspecified	Abnormality of the female genitalia	1
69	46,XX	Internal	Urethrocele	1
70	46,XY	Internal	Ovarian gonadoblastoma	1
71	46,XX	Internal	Aplasia/hypoplasia of the ovary, aplasia/hypoplasia of the uterus	2+
72	46,XX	Internal	Bicornuate uterus	1
73	46,XX	Internal	Aplasia of the vagina, aplasia/hypoplasia of the uterus, delayed puberty, primary amenorrhea	2+
74	46,XX	Internal	Polycystic ovaries, delayed puberty	2+
75	46,XX	Internal	Polycystic ovaries	1
76	46,XY	Unspecified	Ambiguous genitalia: female	1
77	46,XX	Internal	Ectopic ovary, intrauterine growth retardation	2+
78	46,XY	External	Labial hypertrophy	1
79	46,XX	Internal	Female hypogonadism	1
80	46,XX	Internal	Premature ovarian insufficiency	1
81	46,XX	Internal	Premature ovarian insufficiency	1
82	46,XX	Internal	Premature ovarian insufficiency	1
83	Unknown	Internal	Ovarian cyst	1
84	Unknown	Internal	Primary amenorrhea	1
85	Unknown	Internal	Urogenital sinus anomaly	1
86	Unknown	Internal	Vaginal atresia	1
87	46,XX	Internal	Secondary amenorrhea	1
88	46,XX	Internal	Menorrhagia	1
89	46,XX	Internal	Bicornuate uterus	1
90	46,XX	Internal	Vaginal hernia	1
91	46,XX	Internal	Polycystic ovaries	1
92	46,XX	Both	Aplasia of the uterus, clitoral hypertrophy, genital tract atresia, gonadal tissue inappropriate for external genitalia or chromosomal sex, true hermaphroditism	2+

93	46,XY	Male	Abnormality of the fallopian tube, bilateral cryptorchidism, perineal hypospadias	2+
94	46,XX	Internal	Urogenital sinus anomaly	1
95	46,XX	Internal	Hypogonadotropic hypogonadism, primary amenorrhea	2+
96	46,XX	Internal	Mild intrauterine growth retardation, urethrocele	2+
97	46,XX	Internal	Secondary amenorrhea	1
98	46,XX	Internal	Menorrhagia, precocious puberty, intrauterine growth	2+
99	46,XX	Internal	Amenorrhea	1
100	46,XX	Internal	Aplasia of the uterus	1
101	46,XX	Internal	Aplasia of the ovary	1
102	Unknown	External	Clitoral hypertrophy	1
103	46,XX	Internal	Abnormality of the menstrual cycle, abnormality of the uterus, abnormality of the vagina	2+
104	46,XX	Internal	Longitudinal vaginal septum	1
105	46,XX	Internal	Menorrhagia	1
106	46,XX	Internal	Polycystic ovaries	1
107	46,XY	Male	Male pseudohermaphroditism, abnormality of the uterus, cryptorchidism, gonadal dysgenesis, wide intermammary distance	2+
108	46,XX	Internal	Oligomenorrhea	1
109	46,XX	Internal	Intrauterine growth retardation, ovarian cyst	2+
110	46,XX	Internal	Premature ovarian insufficiency	1
111	46,XX	Internal	Ovarian cyst	1
112	46,XX	Internal	Menorrhagia	1
113	46,XX	Internal	Premature ovarian insufficiency, gonadal dysgenesis	2+
114	46,XX	Both	Dysgerminoma, breast carcinoma	2+
115	46,XX	Internal	Abnormality of the uterus, severe intrauterine growth retardation	2+
116	46,XY	Internal	Abnormality of the uterus	1
117	46,XX	Internal	Premature ovarian insufficiency	1
118	46,XX	Internal	Aplasia/hypoplasia of the ovary, aplasia/hypoplasia of the uterus, secondary amenorrhea	2+
119	46,XX	Internal	Secondary amenorrhea	1
120	46,XX	Internal	Abnormality of the uterus	1

121	46,XX	Internal	Polycystic ovaries	1
122	46,XX	Internal	Aplasia of the ovary, hypoplasia of the uterus	2+
123	46,XX	Internal	Premature ovarian insufficiency	1
124	46,XX	Internal	Aplasia of the uterus	1
125	46,XX	Internal	Secondary amenorrhea	1
126	46,XY	Internal	Gonadal dysgenesis, primary amenorrhea	2+
127	46,XX	Internal	Ovarian cyst, partial vaginal septum	2+
128	46,XX	Internal	Premature ovarian insufficiency, primary amenorrhea	2+
129	46,XX	Internal	Premature ovarian insufficiency, spontaneous abortion	2+
130	46,XX	Internal	Aplasia of the ovary, intrauterine growth retardation	2+
131	46,XY	Unspecified	Abnormality of the female genitalia	1
132	46,XX	External	Fused labia minora	1
133	46,XX	Unspecified	Abnormality of the female genitalia	1
134	46,XX	External	Abnormality of the labia	1
135	46,XX	External	Abnormality of the labia	1
136	46,XX	Internal	Premature ovarian insufficiency	1
137	46,XX	Internal	Streak ovary	1
138	46,XX	Unspecified	Abnormality of the female genitalia	1
139	46,XX	Internal	Abnormality of the uterus, streak ovary	2+
140	46,XY	External	Abnormality of the labia	1
141	46,XX	Both	Abnormality of the uterus, clitoral hypertrophy	2+
142	46,XX	Internal	Menstrual irregularities, premature ovarian insufficiency	2+
143	46,XY	External	Abnormality of the labia, hypoplastic nipples	2+
144	46,XX	External	Abnormality of the labia	1
145	46,XY	Internal	Abnormality of the uterus	1
146	46,XX	External	Clitoral hypertrophy	1
147	46,XY	Male	Male pseudohermaphroditism, streak ovary, chordee, cryptorchidism, hypospadias	2+
148	46,XX	External	Abnormality of the labia, hypoplastic nipples, wide intermamillary distance	2+
149	46,XX	External	Abnormality of the labia	1

150	46,XX	External	Abnormality of the labia, clitoral hypertrophy	2+
151	46,XX	External	Clitoral hypertrophy, hypoplastic nipples	2+
152	46,XX	External	Abnormality of the labia	1
153	46,XX	External	Clitoral hypertrophy	1
154	46,XX	Internal	Abnormality of the uterus, streak ovary	2+
155	46,XX	Unspecified	Abnormality of the female genitalia, wide intermamillary distance	2+
156	46,XX	Unspecified	Abnormality of the female genitalia, abnormality of the uterus, streak ovary	2+
157	46,XX	Unspecified	Abnormality of the female genitalia	1
158	46,XX	Both	Abnormality of the uterus, wide intermamillary distance	2+
159	46,XY	Male	Male pseudohermaphroditism, abnormality of the uterus, absent testis, hypospadias	2+
160	46,XX	Both	Abnormality of the labia, abnormality of the uterus, abnormal vagina morphology	2+
161	46,XX	Internal	Aplasia of the ovary, streak ovary	2+
162	46,XX	External	Clitoral hypertrophy	1
163	46,XX	Internal	Abnormality of the uterus, abnormal vagina morphology	2+
164	46,XX	Internal	Abnormality of the uterus, abnormal vagina morphology	2+
165	46,XX	External	Abnormality of the labia	1
166	46,XX	External	Abnormality of the labia	1
167	46,XX	Unspecified	Abnormality of the female genitalia, wide intermamillary distance	2+
168	46,XX	External	Abnormality of the labia, hypoplastic nipples, wide intermamillary distance	2+
169	46,XX	External	Fused labia minora	1
170	46,XX	External	Abnormality of the labia, clitoral hypertrophy, wide intermamillary distance	2+
171	46,XX	Both	Abnormality of the labia, abnormality of the uterus, vaginal atresia, wide intermamillary distance	2+

172	46,XX	Unspecified	Abnormality of the female genitalia, delayed puberty, ovarian cyst	2+
173	46,XX	External	Abnormality of the labia	1
174	46,XX	External	Abnormality of the labia	1
175	46,XX	Unspecified	Abnormality of the female genitalia, aplasia/hypoplasia of the breasts	2+
176	46,XX	Unspecified	Abnormality of the female genitalia, wide intermamillary distance	2+
177	46,XX	Unspecified	Abnormality of the female genitalia	1
178	46,XX	Internal	Secondary amenorrhea	1
179	46,XX	Unspecified	Abnormality of the female genitalia	1
180	46,XX	Internal	Delayed puberty, primary amenorrhea	2+
181	46,XX	Unspecified	Abnormality of the female genitalia	1
182	46,XX	Internal	Abnormality of the uterus	1
183	46,XX	External	Abnormality of the labia	1
184	46,XX	Unspecified	Abnormality of the female genitalia	1
185	46,XX	Unspecified	Abnormality of the female genitalia, wide intermamillary distance	2+
186	46,XX	External	Abnormality of the labia	1
187	46,XX	Unspecified	Abnormality of the female genitalia	1
188	46,XX	Unspecified	Abnormality of the female genitalia	1
189	46,XX	External	Abnormality of the labia, wide intermamillary distance	2+
190	46,XX	Internal	Streak ovary	1
191	46,XX	External	Abnormality of the labia	1
192	46,XX	External	Abnormality of the labia	1
193	46,XX	Internal	Abnormality of the uterus, abnormal vagina morphology	2+
194	46,XX	External	Abnormality of the labia, wide intermamillary distance	2+
195	46,XX	Internal	Abnormality of the uterus	1
196	46,XX	External	Fused labia minora	1
197	46,XX	External	Abnormality of the labia, wide intermamillary distance	2+
198	46,XX	Unspecified	Female pseudohermaphroditism	1

199	46,XX	Unspecified	Abnormality of the female genitalia	1
200	46,XX	Internal	Abnormality of the uterus	1
201	46,XX	External	Abnormality of the labia	1
202	46,XX	External	Fused labia minora	1
203	46,XY	Both	Aplasia of the ovary, gonadal dysgenesis, wide intermamillary distance	2+
204	46,XX	External	Abnormality of the labia	1
205	46,XX	External	Abnormality of the labia	1
206	46,XX	External	Abnormality of the labia	1
207	46,XX	Internal	Streak ovary	1
208	46,XY	Unspecified	Abnormality of the female genitalia, clitoral hypertrophy	2+
209	46,XX	External	Abnormality of the labia, hypoplastic nipples, wide intermamillary distance	2+
210	46,XX	Both	Streak ovary, wide intermamillary distance	2+
211	46,XX	External	Clitoral hypertrophy	1
212	46,XX	Internal	Abnormality of the uterus	1
213	46,XX	External	Abnormality of the labia	1
214	46,XX	External	Abnormality of the labia, wide intermamillary distance	2+
215	46,XX	External	Abnormality of the labia	1
216	46,XX	Internal	Aplasia of the uterus, aplasia of the ovary	2+
217	46,XX	External	Abnormality of the labia	1
218	46,XX	External	Abnormality of the labia	1
219	46,XX	External	Abnormality of the labia	1
220	46,XX	External	Abnormality of the labia	1
221	46,XX	Internal	Abnormality of the uterus	1
222	46,XX	Unspecified	Abnormality of the female genitalia	2+
223	46,XX	Both	Secondary amenorrhea, abnormality of secondary sexual hair, hypoplastic nipples	2+
224	46,XX	Internal	Primary amenorrhea	1
225	46,XX	Both	Rectovaginal fistula, wide intermamillary distance	2+
226	46,XX	Both	Abnormality of the labia, hypoplastic nipples, ovarian cyst	2+
227	46,XX	Unspecified	Abnormality of the female genitalia, supernumerary nipple, wide intermamillary distance	2+

228	46,XX	Internal	Rectovaginal fistula	1
229	46,XX	Both	Uterine neoplasm, aplasia/hypoplasia of the breasts	2+
230	46,XX	Internal	Streak ovary	1
231	46,XX	External	Abnormality of the labia	1
232	46,XX	Unspecified	Abnormality of the female genitalia	1
233	46,XX	Unspecified	Abnormality of the female genitalia, wide intermamillary distance	2+
234	46,XY	Internal	Gonadal dysgenesis, ovarian cyst, streak ovary	2+
235	46,XX	External	Clitoral hypertrophy	1
236	46,XX	Internal	Abnormality of the uterus	1
237	46,XX	External	Abnormality of the labia	1
238	46,XX	Both	Abnormal external genitalia, abnormality of the uterus, abnormal nipple morphology	2+
239	46,XX	External	Clitoral hypertrophy, supernumerary nipple	2+
240	46,XY	Both	Clitoral hypertrophy, streak ovary	2+
241	46,XX	Internal	Hypogonadotrophic hypogonadism, primary amenorrhea	2+
242	46,XX	Unspecified	Abnormality of the female genitalia, abnormality of the uterus, streak ovary, supernumerary nipple	2+
243	46,XX	Both	Abnormality of the labia, abnormality of the uterus, wide intermamillary distance	2+
244	46,XX	Both	Abnormality of the labia, aplasia of the ovary, aplasia of the uterus, vaginal atresia, wide intermamillary distance	2+
245	46,XX	Internal	Abnormality of the uterus, vaginal atresia	2+
246	46,XX	External	Hypoplastic female external genitalia	1
247	46,XX	External	Abnormality of the labia	1
248	46,XX	Internal	Aplasia of the ovary, aplasia of the uterus, vaginal atresia	2+
249	46,XY	External	Abnormal external genitalia, abnormality of the labia	2+
250	46,XX	Internal	Abnormality of the uterus, vaginal atresia	2+
251	46,XX	External	Hypoplastic female external genitalia	1

252	46,XX	Internal	Aplasia of the ovary	1
253	46,XX	External	Abnormality of the labia	1
254	46,XX	Internal	Abnormality of the uterus	1
255	46,XY	External	Abnormality of the labia	1
256	46,XY	Internal	Aplasia of the uterus, vaginal atresia, streak ovary	2+
257	46,XX	External	Clitoral hypertrophy	1
258	46,XX	External	Clitoral hypertrophy	1
259	46,XX	External	Abnormality of the labia, hypoplastic female external genitalia	2+
260	46,XX	External	Abnormality of the labia	1
261	46,XX	Internal	Primary amenorrhea	1
262	46,XX	External	Abnormality of the labia	1
263	46,XX	Internal	Abnormality of the uterus, vaginal atresia	2+
264	46,XX	External	Fused labia minora	1
265	46,XY Female	Internal	Aplasia of the uterus	1
266	46,XX	External	Abnormality of the labia, clitoral hypertrophy	2+
267	46,XX	External	Abnormality of the labia	1
268	46,XX	Internal	Abnormality of the uterus	1
269	46,XX	Internal	Abnormality of the uterus	1
270	46,XX	Internal	Aplasia of the ovary	1
271	46,XX	External	Hypoplastic female external genitalia, hypoplastic nipples, wide intermamillary distance	2+
272	46,XX	External	Abnormality of the labia	1
273	46,XX	Internal	Abnormality of the uterus	1
274	46,XX	Both	Abnormality of the uterus, rectovaginal fistula, wide intermamillary distance	2+
275	46,XX	External	Hypoplastic female external genitalia	1
276	46,XX	Unspecified	Abnormality of the female genitalia, aplasia of the uterus, vaginal atresia	2+
277	46,XX	Both	Primary amenorrhea, aplasia/hypoplasia of the breasts, supernumerary nipple	2+
278	46,XX	Both	Hypogonadotropic hypogonadism, primary amenorrhea, supernumerary nipple	2+
279	46,XX	Internal	Abnormal vagina morphology	1

280	46,XX	Internal	Delayed puberty, secondary amenorrhea	2+
281	46,XX	Internal	Abnormality of the uterus, aplasia of the ovary	2+
282	46,XX	External	Abnormality of the labia	1
283	46,XX	Internal	Secondary amenorrhea	1
284	46,XX	External	Clitoral hypertrophy	1
285	46,XX	External	Hypoplastic female external genitalia	1
286	46,XX	External	Abnormality of the labia	1
287	46,XX	External	Hypoplastic female external genitalia	1
288	46,XX	External	Hypoplastic female external genitalia, hypoplastic nipples	2+
289	46,XX	Internal	Primary amenorrhea	1
290	46,XX	External	Abnormality of the labia, clitoral hypertrophy, wide intermamillary distance	2+
291	46,XX	External	Abnormality of the labia, abnormal nipple morphology	2+
292	46,XX	External	Hypoplastic female external genitalia	1
293	46,XX	External	Hypoplastic female external genitalia, wide intermamillary distance	2+
294	Unknown	Internal	Secondary amenorrhea	1
295	46,XX	Internal	Premature ovarian insufficiency	1
296	46,XX	Internal	Female hypogonadism, premature ovarian insufficiency	2+
297	46,XX	Internal	Premature ovarian insufficiency	1
298	46,XX	Unspecified	Abnormality of the female genitalia	1
299	46,XX	Internal	Abnormality of the uterus, primary amenorrhea	2+
300	46,XX	External	Clitoral hypertrophy	1

Table S2. Common Comorbidities in Patients with AFG.

Phenotype	Count	% of total
Intellectual disability	141	47%
Short stature	106	35%
Micrognathia	81	27%
Microcephaly	73	24%
Low-set ears	70	23%
Muscular hypotonia	65	22%
Small for gestational age	64	21%
Hypertelorism	62	21%
Proportionate short stature	55	18%
Abnormality of the pinna	53	18%
High palate	47	16%
Epicanthus	46	15%
Short neck	44	15%
Wide nasal bridge	39	13%
Depressed nasal bridge	38	13%
Upslanted palpebral fissure	37	12%
Ventricular septal defect	36	12%
Single transverse palmar crease	35	12%
Posteriorly rotated ears	34	11%
Congenital microcephaly	33	11%
Downturned corners of mouth	31	10%
Premature birth	31	10%
Scoliosis	30	10%
Strabismus	30	10%
Frontal bossing	29	10%
Finger clinodactyly	29	10%
Ptosis	29	10%